

**AN OSTEOLOGICAL AND HISTORICAL EXAMINATION OF THE  
PRESBYTERIAN FOREST CENTRE CEMETERY  
PRINCE ALBERT, SASKATCHEWAN**

A Thesis Submitted to the College of  
Graduate Studies and Research  
In Partial Fulfillment of the Requirements  
For the Degree of Master of Arts  
In the Department of Archaeology and Anthropology  
University of Saskatchewan  
Saskatoon

By

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## **ABSTRACT**

On October 7<sup>th</sup>, 2004, construction of the Saskatchewan Forest Centre Building in Prince Albert, Saskatchewan was temporarily halted due to the exposure of human remains from within the soil matrix. Subsequent archaeological investigation revealed the presence of numerous rectangular soil stains suggesting the presence of additional interments within the construction site. The remains of two individuals were recovered during this original construction exposure. The following spring, Western Heritage Services, Inc., in coordination with the Department of Archaeology, University of Saskatchewan, conducted an extensive excavation at the site which unearthed 19 individuals of different racial affiliation, sex, and age. Interment location and an extensive document and literature review suggest that this was the cemetery established by Rev. James Nisbet, founder of the Prince Albert mission. This mission would evolve into the City of Prince Albert. The historic significance and sensitive nature of the site required the involvement of several interest groups including the Heritage Resource Branch of the Department of Saskatchewan Culture, Youth and Recreation, the Prince Albert Historical Society, and above all, St. Paul's Presbyterian Church which was responsible for the reinterment of the Forest Centre individuals and was an indispensable source of information. Prior to reinterment, a fundamental osteological and paleopathological examination was conducted for each of the 21 individuals. Coordination and completion of cultural material analysis was performed by Amanda Boechler, an undergraduate archaeology student of the University of Saskatchewan and Mark MacKenzie of the Western Development Museum. Preliminary results may be

found within the final site report issued by Western Heritage Services, Inc. dated November, 2005.

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## **CHAPTER ONE**

### **Introduction**

The examination of cemeteries proffers valuable, multi-faceted information pertaining to the past. As such, numerous avenues of research are required to fully satisfy a comprehensive conclusion. The comprehensive nature of burial and cemetery projects necessitate the involvement of local interest groups and specialists for the study to be successfully completed in a considerate manner, particularly within a limited time frame. The intensification of contemporary urban, agricultural, oil and natural gas development is primarily responsible for the increased frequency of unknown cemetery and burial detection. Despite the sensitive nature of interment projects, the archaeologist is often restricted to completing the investigation within a less than optimal time frame based on the schedule of the contractor, interest groups, and other individuals associated with the excavation and development site. Regardless, it is imperative that the remains of the individuals exhumed from these cemeteries are minded and treated in a respectful manner during all aspects of the research process.

#### **1.1 Forest Centre Cemetery Project Background**

On October 7<sup>th</sup>, 2004, construction of the Saskatchewan Forest Centre Building development was temporarily halted due to the exposure of human remains from within

the soil matrix. After it was determined that the uncovered remains were not of a contemporary forensic nature, Golder Associates conducted a preliminary archaeological investigation of the immediate construction vicinity. Numerous rectangular soil stains were identified suggesting additional interments were present within the site. During this assessment, one of the potential features was excavated (Feature 1). However, this anomaly appeared to have been an earlier utility construction disturbance (Western Heritage Services, Inc. [WHS] 2005). Archaeologists from Golder Associates also recovered human skeletal material of two individuals (G26 and G27) from the backdirt deposited as a product of lot construction. In addition, the Golder Associates final report (2007) submitted to the Saskatchewan Heritage Resources Branch indicates that they had excavated one burial (G26) that was in immediate danger of being destroyed (Refer to Section 5.19).

The following spring, the Forest Centre project was tendered and awarded to Western Heritage Services, Inc. on the basis of competitive bidding (WHS 2005). A Ground Penetrating Radar study was conducted, but produced inconclusive results (WHS 2005). Despite earlier setbacks, excavation of the site commenced on May 25<sup>th</sup> and ran until June 3<sup>rd</sup>, 2005. Twenty-three burials were exhumed, although five of the graves were empty. Feature 3 presented coffin hardware but no grave was recovered. Following mitigation, the recovered skeletal material and artifacts were transported to Saskatoon, Saskatchewan where they were cleaned and systematically examined. Coordination and completion of cultural material analysis was performed by Amanda Boechler, an undergraduate archaeology student of the University of Saskatchewan. Her findings will be addressed within Chapter Four. The osteological and paleopathological investigation was performed by the author, under the supervision of Dr. E.G. Walker of

the Department of Archaeology, University of Saskatchewan. A final site report was issued by Western Heritage Services, Inc. to the Heritage Resources Branch of the Department of Saskatchewan Culture, Youth, and Recreation in November of 2005.

## **1.2 Research Objectives**

Excavations at the Forest Centre Presbyterian cemetery unearthed 21 individuals of different racial affiliation, sex, and age. The cemetery population consisted of four adults, two juveniles, and 15 infants. Twelve of these individuals demonstrated an ancestry of Aboriginal decent, whereas five of these individuals exhibited European ancestral features. Due to sex-specific morphological homogeneity displayed in sub-adult skeletal material, the sex of infant and juvenile populations remains difficult to assess. Consequentially, only the adult individuals could be accurately evaluated. Of the four adult individuals present, two were male and two were female. The demography and osteology of the interred population will be further discussed in Chapter Five.

Many of the individuals exhibited evidence of disease and poor general health. Given the historic nature and location of the cemetery this is not surprising. Diseases that were manifested osteologically included osteomyelitis, juvenile porotic hyperostosis, and tuberculosis. Documentary evidence confirms the presence of tuberculosis among other pathological conditions not accounted for by gross examination of skeletal elements. Two individuals exhibited tibial deformities not described in the literature. The paleopathology of the Forest Centre individuals will be more closely discussed in Chapter Five.

Following the discovery of the Forest Centre cemetery, Dale Russell (Western Heritage Services, Inc.) conducted a historical investigation in order to establish the context and affiliation of the burial ground. Based on the location of the interments and numerous sources of documentation, it was determined that the cemetery was likely established between 1866 and 1874 by Rev. James Nisbet, the founder of the Prince Albert settlement. The historical background of the area will be examined in Chapter Two.

Apart from wood, cloth, nails, and tacks associated with coffin construction, very few personal artifacts were recovered from the graves. However, several of the artifacts found were datable to a succinct period of time. A discussion pertaining to the artifactual evidence is found in Chapter Four.

The primary focus of this research was to identify the age, sex, and racial affiliation of each individual buried at the Forest Centre Presbyterian cemetery. Furthermore, it was considered imperative to identify any pathological or developmental abnormalities which may provide testament to the health status and environment of this population. By placing these criteria within a historic framework, an approximated demographic and health-oriented depiction of the interred population may be constructed. It was anticipated that this investigation would provide clues revealing the hidden identities of the interred individuals which would in turn provide concrete dates and a definite religious affiliation for the cemetery itself. Unfortunately, no burial records exist for the early Presbyterian cemetery. It is likely that they were destroyed in the Nisbet Academy fire, or it is possible that they became lost during the numerous movements of the church. The documents may also have been lost during the 1925 separation of the United and Presbyterian churches.

### ***1.2.1 Recovery of Human Remains***

In early October of 2004, human remains were exposed during the construction of the Saskatchewan Forest Centre parking lot and storm sewer facilities. As a result, Golder Associates Ltd. (Saskatoon branch) was contracted by the Saskatchewan Opportunities Corporation to complete a Heritage Resource Impact Assessment [HRIA] of the area to ascertain if additional human remains were situated within the construction zone (Golder 2007). Construction of the storm sewer trench and soil removal of the parking lot area was monitored and assessed for archaeological potential (Golder 2007). Construction activities were halted upon the detection of more human remains within the trench, on the parking lot surface, and within the backdirt pile. In addition, Golder archaeologists identified 27 rectangular mottled soil stains which were interpreted as possible grave shaft features (Golder 2007). Some of these were associated with exposed human bone and as such were identified as positive grave shaft features (Golder 2007). These features, in association with the historical significance of the area, led archaeologists to believe that the site was a cemetery and not limited to several select burials. Due to the significant nature of the site, its location within the city, and the nature of the construction project, a tender went out for the mitigation of the site. Western Heritages Services Inc. was awarded the tender and excavation of the site occurred between May 25 and June 3, 2005. Refer to Chapter Four for information on methodology.

Each of the 27 anomalies (Graves and Features) was assessed resulting in the exhumation of 21 individuals. The first grave (G26) was excavated by archaeologists from Golder Associates as the remains were impacted and exposed by the storm sewer trench (Golder 2007). Remains were also recovered during their backdirt screening

program (G27). The location and imminent destruction of another soil feature was also excavated during this initial assessment. Feature 1 (Figure 1) was revealed to be the result of sewer pipeline construction or disconnection for the 1891 St. Paul's Presbyterian Church building (Golder 2007). During the Western Heritage mitigation project, the remaining potential grave shafts were excavated resulting in the exhumation of 19 individuals, two of which were placed within the same coffin. Feature 2 (Figure 1) appeared to have been an empty hole and Feature 3 (Figure 1) consisted of one nail (WHS 2005). The remaining five coffins were empty. The nature of these burials and the osteology of each individual will be discussed in Chapters 3 and 5 respectively. Note that throughout this discussion, the term *coffin* will be used instead of the term *casket*. A coffin is defined as a box of rough construction that may be rectangular or hexagonal in shape while a casket is a modern "commercially constructed burial container" (Sprague 2005: 131).

### ***1.2.2 Modern Location of the Forest Centre Cemetery***

The cemetery was situated immediately west of the Saskatchewan Forest Centre which is located at 1410 Central Ave. downtown Prince Albert. The Forest Centre property is confined within 9700 m<sup>2</sup> (.97 hectares) or approximately half a city block (Golder 2007). Its north boundary is formed by 10<sup>th</sup> St. W., Central Ave. forms its east boundary, the south periphery is formed by 11<sup>th</sup> St. W. and the west margin is formed by a preexisting alleyway. Golder included the precise land coordinates in their report: "...the development occurs on Surface Parcel No.152394172; Legal Description: Lot 1-Block AA Plan 101562274 (Information Services Corporation of Saskatchewan 2004)." (Golder 2007: 2) The cemetery itself (not including anomalies G7 and G26) is

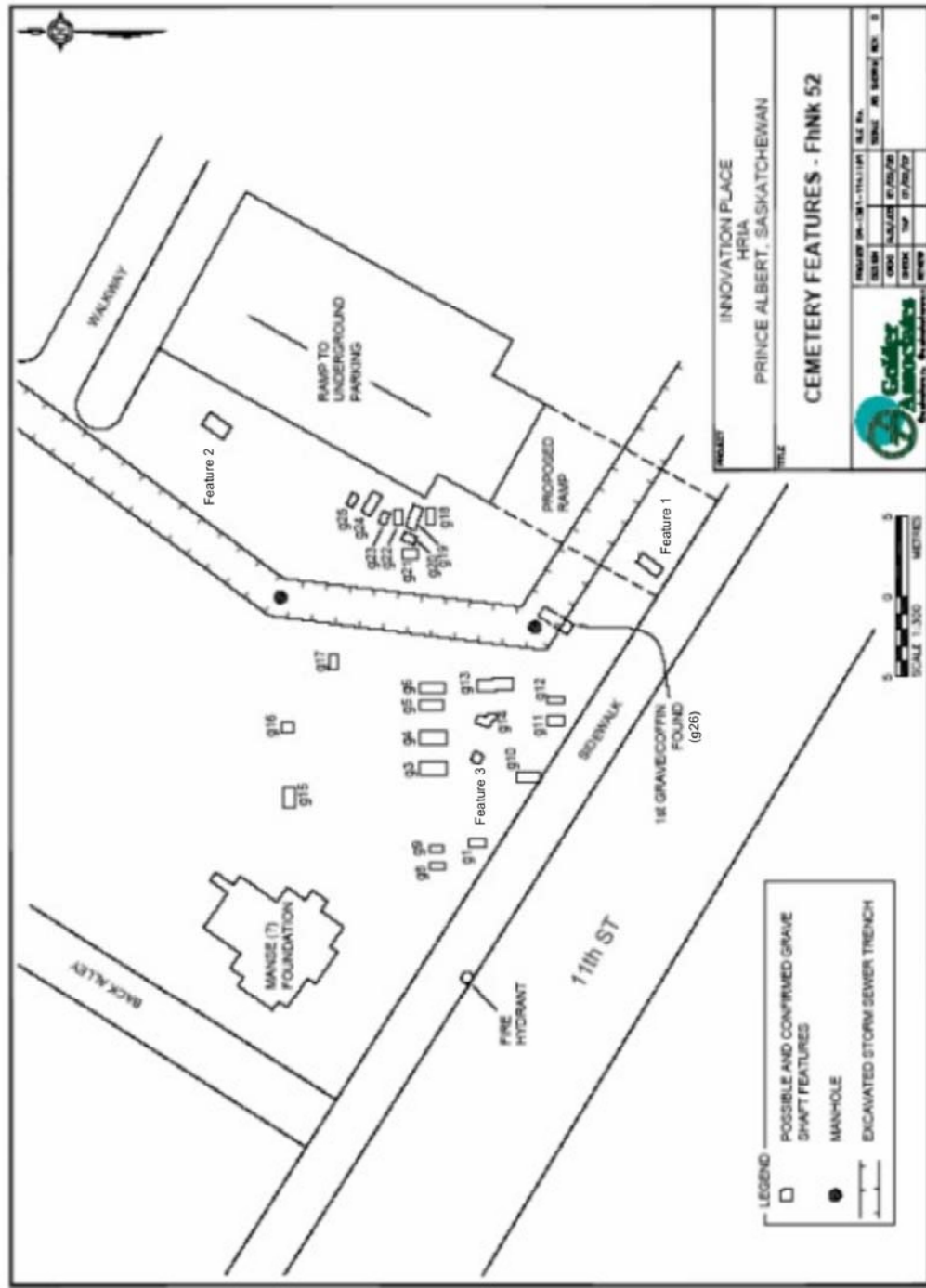


Figure 1. Site Map of the Forest Centre cemetery (FhNk-52) including parking lot plans (Golder Associates Ltd. 2007: 20)



approximately 20 m wide by 20 m in length and may be organized into five clusters.

Cemetery arrangement and mortuary analysis will be examined in Chapter Four.

## **CHAPTER TWO**

### **Historical Background**

#### **2.1 Reverend James Nisbet and the Establishment of the Settlement of Prince Albert**

On June 6<sup>th</sup>, 1866, the Nisbet party departed Kildonan located in what is now the province of Manitoba for Fort Carlton, a Hudson's Bay Company post situated along the North Saskatchewan River (The Home and Foreign Record of the Canada Presbyterian Church, August 1866: 295). Reverend James Nisbet and his wife would not actually depart until the 7<sup>th</sup> of June due to an illness at home (The Home and Foreign Record of the Canada Presbyterian Church, August 1866: 295). From the post, they would traverse further north into Cree territory in order to establish a Presbyterian mission. The Nisbet party would be the first Presbyterian missionaries to the North-West Territories (The Home and Foreign Record of the Canada Presbyterian Church, May 1875) The pioneering party consisted of: Rev. Nisbet, Mary Nisbet (James Nisbet's wife), Mary Jane Nisbet (the Nisbet's young daughter), John McKay (who was a noted bison hunter, spoke Cree and would act as an interpreter), Christina (Christiana?) McKay (John McKay's wife and Mary Nisbet's sister), and the McKay's two young daughters, Christina and Mary Margaret. The party also included two hired men: Alex Polson and William McBeath. Three other individuals were also in attendance: James Green accompanied the party as far as Carlton House, and Miss Roland and Miss Tait

journeyed alongside the party as they ventured further eastward to forts Pitt and Victoria, respectively (The Home and Foreign Record of the Canada Presbyterian Church [The Home and Foreign Record] September 1866: 331). The journey from Kildonan to Carleton House took approximately 39 days by Red River cart and was relatively unproblematic, despite the cold and wet weather conditions.

However, an unfortunate event did occur very early on in the expedition. On the third day of the journey, the party received news that the younger sister of Mary Nisbet and Mrs. McKay had died of dysentery in Kildonan. Naturally, a great debate ensued. In the end, it was decided that all would continue on ahead, as “providence” seemed to direct them, despite concerns for their grieving father at home (The Home and Foreign Record, September 1866: 331).

Upon arrival at Fort Carlton, the party was met by George Flett, Adam Isbister, and Oliph Olson who invited the party to settle near them, another 60 km northeast of the post (Smiley 1970). Adam Isbister was the brother of James Isibister, the first settler in the Prince Albert region and a Metis leader who would play a significant role during the North-west rebellion. George Flett would play a key role in the establishment of the Presbyterian mission. Previously employed with the H.B.C. as a postmaster (Block 1999), he spoke Cree (as he was from an Orkney-Cree background (Block 1999)) and was very familiar with the local landscape and Aboriginal populations. These attributes made him a valuable asset to the Mission as both an interpreter and local guide. Upon Nisbet’s missionary appointment, Flett was retained to survey the area for a suitable location for the mission. En route to Fort Carlton, the Mission party obtained his report recommending suitable mission sites. After inspecting the proposed location and

surrounding area, Nisbet agreed that the area situated along the North Branch of the Saskatchewan River was ideal in every respect.

... [I am] satisfied [with] the excellence of the locality for a settlement. The soil seems of the very best quality; there is abundance of hay ground; and the cattle are feeding in pasture with grass in some places as tall as themselves, and of the richest kinds. If the seasons prove favourable it will be a most excellent place for farming and stock raising. [The Home and Foreign Record, January 1867: 73]

His opinion was bolstered by the advantages of remaining close to Fort Carlton, as pressed upon him by Flett and the Chief Factor Lawrence Clarke (Abrams 1976).

At 5 a.m. on Wednesday July 25<sup>th</sup>, 1866, Rev. James Nisbet and company departed Fort Carlton by boat for the land which would become their home (The Home and Foreign Record, December 1866). During this final portion of the expedition, the party was guided down the North Saskatchewan River by an Aboriginal individual named *Nuchohoo*, or Bad Owl (Cockburn, Historical Sketch: Christina Mills, Historical Narrative Collection, 1990, Prince Albert Historical Museum archives, Saskatchewan). On Thursday July 26<sup>th</sup> at approximately eight o'clock in the morning, they docked at the foot of what would later become Central Avenue (The Home and Foreign Record, December 1866: 46; The Home and Foreign Record, May 1870). Nisbet describes this location in great detail:

...[W]here we now are – which is about two miles below the houses of the settlers. We have here a stoney point – with deep water at the upper end- the bank is pretty high...The prospect up the river is beautiful, having a fine large island covered with pine trees in view, and a large bay immediately above us. Below, the view of the river is soon cut off by a bend that the channel takes to the East. Behind, we have open rolling prairie, of the best description of soil, covered with a most luxuriant growth of grass. On the opposite side of the river,

and on the islands to the left and right, there is an abundance of pine and poplar.  
[The Home and Foreign Record, December 1866: 47]

This immediate landing site seemed to have fully satisfied Nisbet's requirements for the Mission location, as he decided to establish the Mission premises upon that exact spot, despite the settlers' varying opinions (The Home and Foreign Record, December 1866). In honour of Queen Victoria's late husband, Nisbet decided to name this newly founded settlement region *Prince Albert*. In a letter to his sister, Isabella, he states, "Our full designation will be Presbyterian Mission – Prince Albert – Saskatchewan" (Rev. James Nisbet to Isabella Nisbet, letter, 29 November 1866, 1.111 Nisbet Family, Saskatchewan Archives Board, Regina Branch, Saskatchewan.)

The Cree also had a name for this territory which has been spelled and pronounced differently by various sources. *Kestapinik*, *kistahpinanihk* (*kista-pinnanick*), and *kistupunan* are words that have been translated to describe a 'great meeting place' or the 'chief meeting place of the Plains and Woods Cree' (WHS 2005; Cockburn, Historical Sketch: Christina Mills, Historical Narrative Collection, 1990, Prince Albert Historical Museum archives, Saskatchewan). However, Dale Russell (WHS 2005) suggests that these are mistranslations, and that the Cree terms actually refer to the settlement itself. Nisbet's letters substantiate this theory as he states that, "We could not find that the locality has any name in particular..." (Rev. James Nisbet to Isabella Nisbet, letter, 29 November 1866, 1.111 Nisbet Family, Saskatchewan Archives Board, Regina Branch, Saskatchewan. [1.111 SAB]) Furthermore, the lack of deeply stratified, pre-contact archaeological evidence normally exhibited by large in-gathering centres indicates that the Prince Albert area, although a historically well-documented campground, may not be a grand meeting place as previously proposed (WHS 2005).

Due to natural erosion and fluvial depositional processes associated with the North Saskatchewan River, the precise location of the landing site as described by Nisbet is somewhat difficult to pinpoint using contemporary maps and aerial photos. The “stoney point” he describes has likely been altered over time and the appearance of the bank may be affected by the fluctuating depth of the river. H.E. Ross notes that during the early twentieth century, the river had encroached on the south bank, particularly on lots 77 and 78 (Lamontagne et al. 1985). In addition, his use of directional language (i.e. below, above, up, down) appears to be inconsistent and is somewhat ambiguous in nature. Despite this, references to homestead locations and major geographical landmarks provide inference allowing the approximate landing location to be identified.

The 1878 Prince Albert Settlement Dominion Lands survey map (Figure 2) demonstrates the location of the original Presbyterian River Lot (No. 78) and its position relative to the homestead locations of the original settlers. Nisbet described the landing location as being approximately 3.2 km from the houses of the settlers (refer to page 11). In his memoirs, the only individuals whom he refers in this regard during this early period of settlement are Oliph Olson and Adam Isbister. Although George Flett had arrived previously to survey the locality for the Mission party, he did not actually settle in the area. He and his wife, Mary, joined the Nisbet party enroute to Carlton House and resided in the Mission establishment (Block 1999). According to William McDonald, who arrived in the area in 1867, the Olson and Isbister houses were the only residences established up-river from the Mission at that time (Lamontagne et al., eds. 1985). As the map scale suggests, (80 chains is equal to 1 mile or 1.61 kilometres) the Mission property is approximately 2 miles or 3.2 km east of the Isbister and Olson lots, affirming

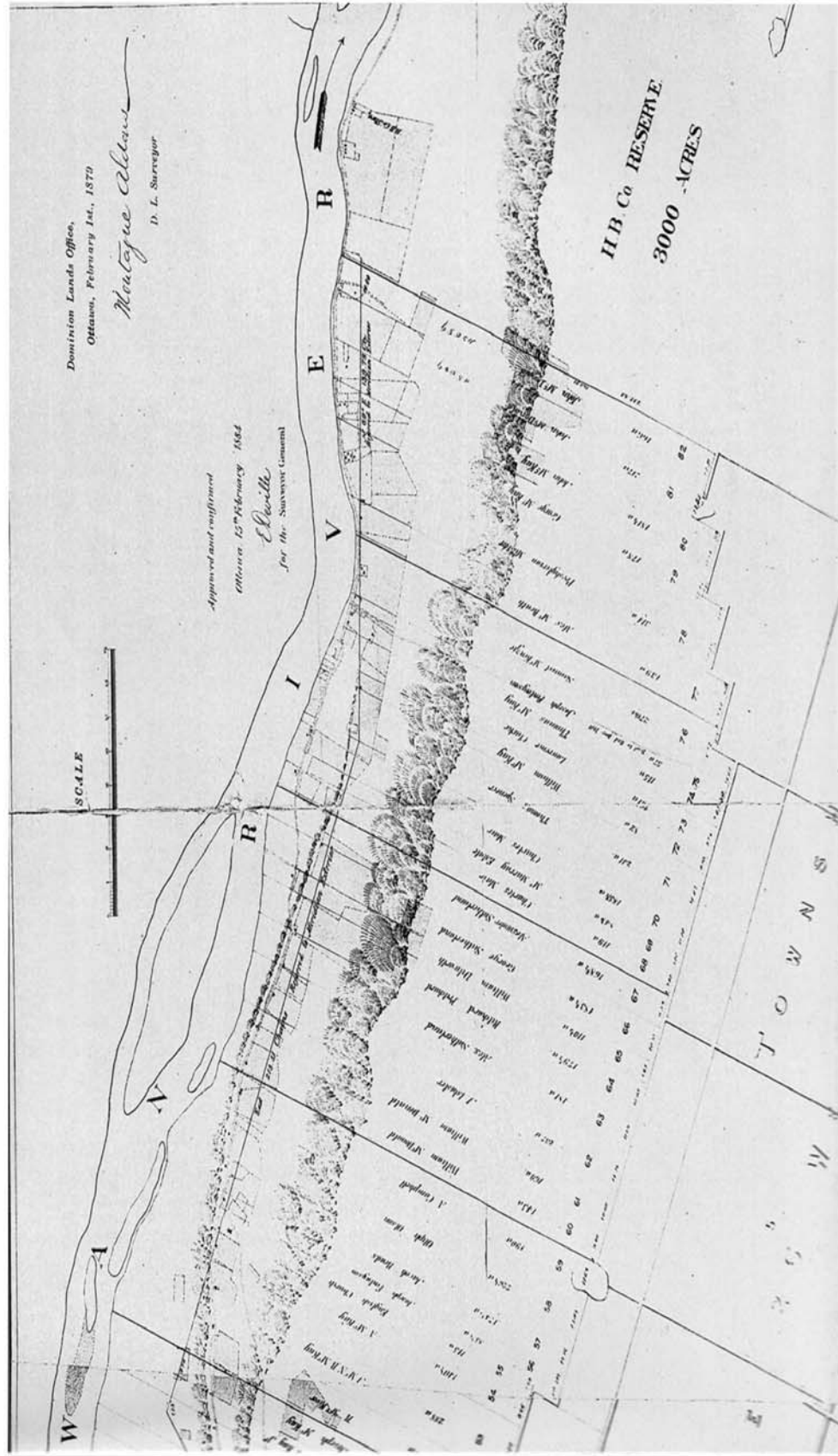


Figure 2. Plan Shewing Lots Surveyed in Prince Albert Settlement, South Side Saskatchewan River, North West Territory, Section Number 4, 1878 Dominion Lands Office, Ottawa.  
 Note: Scale is in chains. (Courtesy Saskatchewan Archives Board A.26/32)

Nisbet's estimation. In 1866, a Dominion survey had not yet been completed and settler land was not confined by set margins. For example, the Kinsmen Park building was originally situated on the corner of 11<sup>th</sup> St. and 1<sup>st</sup> Ave. West (on the lot where the A&W building now stands). As such, the original mission boundaries extended between Lots No. 77 and 78.

Reverend Nisbet also describes large pine and poplar-covered islands to the east and west, one of which is in view of the landing site. Betts (Bette's) Island, which was once designated as a City Park, is located approximately 2.25 km to the west of the Presbyterian lot. Bateman Island is located approximately 2.75 km to the east of the lot. When standing on River St. adjacent to 1<sup>st</sup> Ave. West, it is possible to see a faint outline of the south border of Betts Island. The island may have been more visible from the Mission property during Nisbet's occupancy as the landform appears to have been situated further south than presently located.

In 1924, the Prince Albert Historical Society marked the approximate landing location with a commemorative cairn on the riverbank. The cairn is situated adjacent to 61 River St. (currently Frank Almer's Music Store) in Prince Albert. There has been discussion whether the cairn had been placed in the correct location. However, given its central location within the mission boundaries (which will be discussed presently), it would seem that the monument is accurately or nearly accurately positioned. Unfortunately, the plaque mounted on the Nisbet cairn is riddled with inaccurate information.

Immediately prior to arrival at the future mission premises, the rafting party disembarked at the residence of the settlers where the Mission's cattle had been transported. It is unknown whether they stopped at Olsen's or Isbister's. There Rev.



Nisbet and Mr. Flett introduced themselves to the elder men of a nearby First Nation's encampment expressing their intentions and willingness to converse (Home and Foreign Record, December 1866). Soon afterwards, eight of the men appeared at the mission while the Nisbet party was unloading their goods (Home and Foreign Record, December 1866). Talks commenced subsequent to the smoking of the tobacco Nisbet had presented to the visitors. It soon became very clear that the Aboriginal population was concerned that a mission would entice more Europeans to settle in the area taking their land and further depleting the bison herds (Home and Foreign Record, December 1866). It was also suggested that the Mission should pay for the land they wished to settle as was the custom in England or Canada (Home and Foreign Record, December 1866). Nisbet clearly explained that any incoming European settlers were not invited by any of his party and that the land belonged to the "Cree Nation" and that the Mission had no authority to purchase it from them (Home and Foreign Record, December 1866: 48). The discussion continued the following day, this time with all members of the First Nation's party in attendance. According to Nisbet, the conversation as per the previous day was very amicable. Concern regarding the dwindling bison herds and the influx of European settlers was further commented on. Nisbet made his intentions clear. The Mission was there to educate the Aboriginal population, to teach them an alternative way of subsistence (other than bison hunting), to introduce Christianity to those who volunteered and were interested, and to provide support and aid as best they could (Home and Foreign Record, December 1866). Furthermore, the Mission would not trade or purchase items from the native peoples for profit. They would store items (in particular, food items) to supply to those who would come to the Mission in need (Home and Foreign Record, December 1866), as it was clear that the Aboriginal population was

already in dire need of provisions. Nisbet also noted that the people were welcome to join them at the Mission and receive support and education; however, they would be required to assist the Mission in return primarily via manual labour (Home and Foreign Record, December 1866). The First Nations were somewhat taken aback at the charity proffered to them and on several occasions during the discussions expressed admiration of Nisbet's kindness and generosity. As a result, the group of First Nations welcomed the Mission to the area and articulated their enthusiasm. It should be noted that other Aboriginal groups in the area did not all share the same sentiment even after receiving aid from the Mission.

Throughout Nisbet's appointment as missionary to the Prince Albert Mission, these promises appear to have been upheld to the best of his abilities. The Mission would not only operate as an emissary of the Presbyterian Church, but would also function as an educational centre for the local First Nations (namely Cree), Métis, and early European settlers. It would also serve as an agricultural institution and 'care centre', which instructed local Aboriginal groups in farming techniques and provided food for the starving population outside the Mission. In fact, the Mission was criticized by the Covenor of the Presbyterian Church Synod Foreign Mission Committee (A 676 XVII.D.39 Saskatchewan Archives Board, Saskatchewan; Rev. James Nisbet to Isabella Nisbet, letter, 15 April 1871, 1.111 SAB; Silversides 1989) for not concentrating enough on the spiritual aspect of missionary work and lacking in other missionary duties. A thorough review conducted by Rev. William Moore (1873) would refute these accusations.

By September of 1874, Mary Nisbet's health had dangerously deteriorated. Since April of that year, she had been bedridden (Rev. James Nisbet to Isabella Nisbet,

letter, 22 April 1874, 1.111 SAB) and by September, she was unable to leave her bed at all (Rev. James Nisbet to Isabella Nisbet, letter, 11 September 1874, 1.111 SAB).

Consequentially, the Nisbets decided to leave the Mission and travel back to Kildonan.

The journey took twenty-one and a half days by Red River cart (Rev. James Nisbet to Isabella Nisbet, letter, 11 September 1874, 1.111 SAB). Mary Nisbet died on September 19<sup>th</sup>, 1874 at her father's home in Kildonan (Rev. James Nisbet to Isabella Nisbet, letter, 11 September 1874, 1.111 SAB). Rev. Nisbet died shortly thereafter on 30<sup>th</sup> of Sept. 1874, reportedly of diphtheric trouble (Oliver 1934; A 676 XVII.D.39 Saskatchewan Archives Board, Saskatchewan).

## **2.2 Historical Location of the Forest Centre Cemetery and Chronology of the Presbyterian Church in Prince Albert**

Due to the lack of burial records, grave monuments, or coffin plaques which could have presented personal information regarding the interred individuals (i.e. the date of burial or death) other methods of dating the period of use for the cemetery were employed. The primary dating method was based on the location and establishment of the main buildings associated with the Mission and their proximity or affiliation to the Forest Centre cemetery. In addition, Nisbet's letters and journal provide substantial information which not only affirm the existence of a Mission cemetery, but also provide concrete dates of its early usage. Reconstruction of the Mission property aided in placing the cemetery within a geographical and historic context, especially as many buildings on the property were used as places of worship prior to the construction of the first church building in 1872.

### ***2.2.1 The Mission Houses and Outbuildings***

Prior to the completion of any permanent structures, all Mission activities took place inside hide tents. By the beginning of November 1866, two small log houses were constructed and ready for use, each measuring 6.40 m by 5.49 m (21 by 18 ft) (Rev. James Nisbet to Isabella Nisbet, letter, 29 November 1866, 1.111 SAB). One house was occupied by the Nisbets and the McKays while the Fletts resided in the other (Rev. James Nisbet to Isabella Nisbet, letter, 29 November 1866, 1.111 SAB). The small house inhabited by the Nisbets would not only serve as a centre for domestic activities, but also as a church during the Sabbath (Rev. James Nisbet to Isabella Nisbet, letter, 29 November 1866, 1.111 SAB). By the following spring, the residences were renovated and partitioned apartments, a kitchen, and workman quarters were added on (Home and Foreign Record, May 1868). A temporary school room which also served as a bedroom for the boys attending school was built on to one of the houses (Home and Foreign Record, May 1868). By 1870, the houses had increased in size to 10.97 by 5.49 m (36 by 18 feet) (Home and Foreign Record, May 1870). Although the exact location of these original buildings is unknown, it is alluded to in Nisbet's documentation that they would form part of the Mission square.

The primary dwelling house, often referred to as the Mission house (Figure 3), was situated on the northwest corner of Central Ave. and River St. W.<sup>1</sup> (Lamontagne et al., eds. 1985; Silversides 1989; A 676 XVII.D.18 Saskatchewan Archives Board, Saskatchewan). A complex, one and a half storey log residence, it took approximately five years to construct. The house measured 14.63 by 7.32 m (48 by 24 ft) and

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<sup>1</sup> On the location where the Prince Albert Trading Company, Manville and Co., and Goodfellow Block stood.

presented walls 4.27 m (14 ft) high (Home and Foreign Record, May 1868). A 7.32 by 3.96 m (24 by 13 ft) kitchen was added on to the south end of the structure by 1870 (Home and Foreign Record, May 1870; Lamontagne et al., eds. 1985). The house was divided into numerous rooms which housed various individuals including the Nisbet family, boarding students, and other employees of the Mission (i.e. Adam McBeath,



Figure 2. Mission House (Permission Saskatchewan Archives A381 XI.D.(12).5)

Rev. and Mrs. Vincent). The north-facing entrance to the building was unique, as it was framed by two large logs that were the support structures for the railed overhead balcony that exited Rev. Nisbet's study. Due to a significant population increase in Prince Albert in 1872, the Mission house was also used as a place of worship prior to the construction of the first church.

Subsequent to the departure of the Nisbets in 1874, the Mission house continued to house representatives of the Presbyterian Church until 1883 when a brick manse was constructed. In 1878, the west half of the house became the North-West Mounted Police barracks (Lamontagne et al., eds. 1985; Abrams 1976). The east side of the house became a store initially owned by Arthur Markley and then by Herron and [Addie]

McBeth (Lamontagne et al., eds. 1985). The remaining rooms were utilized as apartments. In 1902, the front of the building became the J.A. Vachon tailor shop and the south side was converted into a store house (Isabella Nisbet to Mary Jane Nisbet, letter, 29 August 1902, 1.111 SAB; Silversides 1989). The ultimate fate of the Mission house remains unknown; however, it is likely that it was demolished to make way for the construction of the Manville and Co. building.

The Mission square was a cluster of buildings that formed a complete square around a central well. The Mission house was the predominant feature of this architectural assemblage even though it was likely the last building completed within the square. The remaining buildings included the two original houses, a byre (cow barn), wood sheds, and a building that contained an ice cellar, root cellar, meat store, milk-house, and workshop (Rev. James Nisbet to Isabella Nisbet, letter, 29 November 1866, 1.111 SAB; Home and Foreign Record, May 1868). Houses were also constructed for John McKay, Adam McBeath, and an Aboriginal man named James who was an invalid (Home and Foreign Record, May 1870; Moore 1873). A small schoolhouse was constructed in 1867 and it is possible that it was also part of the Mission square (see section 2.1.2). By 1870, a separate milk house with an ice cellar, a barn, two byres and a stable were constructed (Home and Foreign Record, May 1870). The stables were situated at 824 Central Ave. on the location of the old Queen's Hotel (Lamontagne et al., eds. 1985; Silversides 1989). A 1.98 m (6.5 ft) tall stockade was erected which completely surrounded the court, the garden, adjacent buildings, and the hay and wood yards (Byers 1920; Home and Foreign Record, May 1870). In 1880, the north side of the stockade was removed (Lamontagne et al., eds. 1985). A roadway of approximately 20.12 m (66 ft) was left in front of the mission between the stockade and the river bank

(Rev. James Nisbet to Isabella Nisbet, letter, 29 November 1866, 1.111 SAB). The Mission property extended for approximately .523 km (26 chains or .325 miles) along the North Saskatchewan embankment (Moore 1873). H.E. Ross provides a picturesque description of the Mission upon his arrival in Prince Albert in 1879:

Let us, in imagination, stand today in front of the Avenue Hotel and we would be on tip of a small hill – a continuation of which will be found to the west particularly on River Lot 76 and to north of ripening wheat. We would follow a trail along where our present Central Avenue is, would cross a slough in front of the present Manville store and we would be in front of the Mission House Stables – the present site of the Queen’s Hotel; pass through a gate and we would be on River Street facing the fire hall, and turning left – on the site where the Prince Albert Trading Company’s store now stands, was the Mission House, formerly with a stockade around the buildings...

[Lamontagne et al., eds. 1985: 106]

### ***2.2.2 The 1867 Schoolhouse vs. the 1872 Church***



Figure 3. NW aspect of Kinsmen Park building (Courtesy Jamie Benson, 2008)

There has been some controversy regarding the past function of the building now situated in Kinsmen Park, south of downtown Prince Albert (Figure 4). The structure had been relocated by the Prince Albert Historical Society in 1932 from its original

location near the corner of First Ave. and 11<sup>th</sup> St. W and was briefly used as a museum. As shown in Figure 4, there are two plaques which commemorate the building; however, they present contrasting data. In spite of this, both plaques agree that the structure was built by Rev. James Nisbet. The plaque above the door (which is the earlier of the two plaques) suggests that the building was the 1867 school and the plate on the stone cairn indicates that it was the 1872 church.

#### *2.2.2.1 The Mission Schoolhouse*

The Mission school commenced on August 28, 1867 with 14 children on the roll (Moore 1873; Rev. James Nisbet to Isabella Nisbet, letter, 10 September 1867, 1.111 SAB). Classes were instructed by Adam McBeath until his health deteriorated and prevented him from teaching. Prior to this, Rev. Nisbet taught children who lived at or near the Mission (Moore 1873). Originally, classes were conducted in English and Cree; however, the children seemed more adept to learning in English and as such, subsequent instruction was solely in English (Moore 1873). Lessons included instruction in reading, geography, history, writing, grammar, arithmetic, and book-keeping (Moore 1873). Children attended school on a *volunteer* basis. Parents were invited to send their children to be educated at the Mission and could come and retrieve them at any time although this was not encouraged. Classes were also offered to First Nations adults, but unfortunately there was little interest (Moore 1873).

To accommodate the increased number of children attending classes, a small temporary schoolhouse was constructed which also served as sleeping quarters for the male students and as a place of worship on the Sabbath (Home and Foreign Record, May 1870; Rev. James Nisbet to Isabella Nisbet, letter, 10 September 1867, 1.111 SAB).



Like all of the other buildings on the Mission property, it was of log construction and measured 5.49 by 4.27 m (18 by 14 ft) (Home and Foreign Record, May 1870). When compared to the Kinsmen Park building (Figure 4) which measures 6.40 by 9.14 m (21 by 30 ft) (Measurement of Kinsmen Park building courtesy of Jamie Benson,, Prince Albert Historical Society) it is clear that these structures cannot be one and the same. In addition, it is unlikely that the student boarders would be living away from the main part of the Mission unsupervised. As such, it is feasible to assume that the schoolhouse would be situated within or near to the Mission square, whereas the Kinsmen Park building was situated on the far west corner of the Mission property (approximately .3 km from the Mission house).

#### *2.2.2.2 The 1872 Church*

By 1870, the Mission population had grown significantly enough to warrant the construction of a new church that would also function as a schoolhouse (Figure 5).

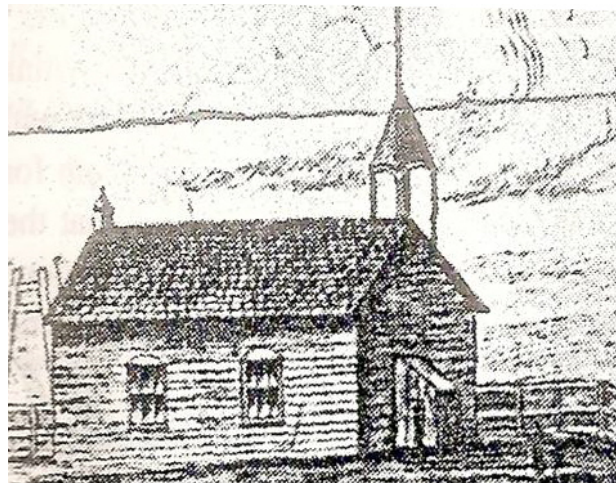


Figure 4. 1872 Presbyterian Mission church  
(Courtesy Silversides 1989, as published in the *Canadian Illustrated News*, 19 July 1879,  
Hayter Reed, sketch artist)

During the winter of 1871, materials were collected and prepared for the assembly of a church that would house approximately 200 individuals (Home and Foreign Record, April 1871). By the summer of 1872, the church was completed. Rev. Nisbet provides a good description of the building:

We have been occupying our little church for the last three Sabbaths. The walls were put up just before seedtime, and now we have only some plastering to do to it, unless we could get boards prepared to weather board it outside; but, even without that, it has a very respectable appearance. It is a neat comfortable building, with open belfry-shaft and vane. It contains 120 sittings, and more may be provided when required. The people have given a good deal of voluntary help; but the greater-part, by far, of the work has been done by ourselves, considerable to the neglect of my garden.

[Letter dated 8 July 1872, Home and Foreign Record, September 1872: 261]

Unfortunately, Rev. Nisbet does not provide any information as to the location of the building on the Mission property. However, H.E. Ross describes the location of the Presbyterian Church in 1880: "...the Presbyterian Church was a small building situated on River Lot 77 about there the Hanafin Block now stands, the entrance facing north." (Lamontagne et al. 1985) As this description predates the existence of the 1881 Presbyterian church, it can only apply to the 1872 church. The Hanafin Block was located at 131 River St. W. (Henderson Telephone Directory 1909), which places the building very near the northwest corner of 1<sup>st</sup> Ave. W. and 11<sup>th</sup> St. W where the Kinsmen Park building was originally located. Other sources suggest that the church was situated on the location of the old Bank of Ottawa and the Empress Hotel (A 676 XVII.D.18 Saskatchewan Archives Board, Saskatchewan; Barentsen et al., ed. 2006). The old Bank of Ottawa was situated near the intersection of 10<sup>th</sup> St. W. and 1<sup>st</sup> Ave. W. This impressive building, albeit altered, still exists today and is located on the west side of 1<sup>st</sup> Ave. W. The Empress Hotel was located on the corner of 1<sup>st</sup> Ave. W. and 11<sup>th</sup> St.

E. (A 676 XVII.D.18 Saskatchewan Archives Board, Saskatchewan). Each of these references places the 1872 church within close proximity of the northwest corner of the intersection of 1<sup>st</sup> Ave. W. and 11<sup>th</sup> St. W., suggesting the building located in Kinsmen Park may actually be the 1872 Presbyterian Mission church.

The lack of a belfry or remnants thereof on the roof of the Kinsmen Park building casts doubt on its past function as the church in question. However, it is clear that the original bark roofing had been replaced and from the inside of the building one can see that many of the supporting beams had been substituted. This maintenance was likely due to the decay of the wood over time. Other logs in the walls had also shown evidence of being replaced. Therefore, it is plausible to assume that the belfry and vane had decayed and were never replaced. In addition, the open-concept belfry shaft does not appear to have entered the roof, as indicated in Figure 5. As such, it is possible that this type of belfry would not have influenced the interior structure of the church roof. This rational design would deter the elements and bothersome creatures (i.e. bats) from entering the church.

The size and capacity of the Kinsmen Park building also cast suspicion on its function as the 1872 church. Although Nisbet does not provide dimensions of the church, he does indicate that it contained 120 sittings with room for more when necessary. (Letter dated 8 July 1872, Home and Foreign Record, September 1872: 261). According to the National Building Code of Canada, a building used as an assembly space with non-fixed seats is required to allot .75 m<sup>2</sup> per person (National Research Council of Canada [NRC]) 2005: 3-30 Division B, Table 3.1.17.1). Therefore, a building constructed to house 120 seated persons would need to be approximately 90 m<sup>2</sup> (961 ft<sup>2</sup>). The Kinsmen Park building is only 58.5 m<sup>2</sup> (630 ft<sup>2</sup>). In accordance with NRC

guidelines, a building of that size could only accommodate 78 people. Based on these parameters, it is unlikely that the Kinsmen Park building ever functioned as the 1872 Church.



Figure 5. NW rear-facing view of Kinsmen Park Building. Note the two windows (now boarded) on the east (right) wall and the dovetailed corners. (Courtesy Jamie Benson, 2008)

However, the architectural design of the Kinsmen Park building is similar to that of the 1872 Church (Figure 5). Both buildings are of log construction and exhibit two divided-light windows on the left side of building (when facing the entrance). The neat corners of the Kinsmen Park structure are formed by dovetail-cut logs (Figure 6). Unfortunately, the type of log construction used in the 1872 Church is not evident in Hayter Reed's sketch (Figure 5). The windows of the Kinsmen Park building have been boarded up for conservation and security as it now functions as a storage facility. The original door has also been replaced with two metal doors. In contrast, the 1872 Church appeared to have also had a small steeple-like structure (chimney?) on the rear aspect of the roof and a small awning or porch over the main entrance to the Church (Figure 5).

However, it is possible that these elements had decayed or were removed when the building was moved from its original location in 1932 by the Prince Albert Historical Society.

William Maclise's stable (Figure 7) is situated immediately to the south of the



Figure 6 William Maclise Stable / Blockhouse

Kinsmen Park building and was also relocated in 1932 by the Prince Albert Historical Society. These buildings housed Prince Albert's Historical Museum until 1977 when the museum relocated to the old firehall located on the north end of Central Ave. (City of Prince Albert 2004). The plaque commemorating this structure indicates that it was built by Archie Ballantyne and was utilized as a blockhouse during the 1885 Métis rebellion. Unfortunately, the date of its construction is not provided. However, William V. Maclise settled in Prince Albert in 1881 (A 676 XVII.D.18: 4 Saskatchewan Archives Board, Saskatchewan) hence, the building cannot be older than that date. The stable and the Kinsmen Park building share very similar architectural characteristics. Both buildings exhibit the same type of dovetail log construction, log orientation, and similar internal beam structure. It is believed that the stable was originally situated at the

southwest corner of 1<sup>st</sup> Ave. W. and 13<sup>th</sup> St. (Jamie Benson, personal communication). However, a photograph of a building at this approximate location (E 806, P.A. Archives), albeit similar, cannot be the stable as it depicts a building with different log orientation and window size. With this in mind, it should be noted that when the buildings were relocated to Kinsmen Park, they were disassembled log by log and rebuilt in their current location (Barentsen et al., ed. 2006; Jamie Benson, personal communication). In any case, the similarities in architecture may suggest that the Kinsmen Park building and the Maclise stable may be affiliated and as such may share a common date or timeframe. An architectural review of these historic structures may shed some light on this matter. Further research into the original function and identity of the Kinsmen Park building is recommended and may be conducted by the author at a later date.

### ***2.2.3 The 1881 Church***

Following the departure and death of Rev. James and Mary Nisbet, a series of Reverends were sent to Prince Albert to take over the duties of the Mission. Although each individual contributed to different aspects of the Mission, few stayed more than three years. Many attributed this lack of commitment to the isolated location of the community. (For a concise description of the Reverends who were posted at the Mission subsequent to 1874, refer to the document published by the Presbyterian Church in Prince Albert: *St. Paul's Presbyterian Church 1866-2006: A History* by Barentsen et al. 2006. )

In 1880, Rev. John Sieveright was appointed to the Prince Albert Presbyterian Mission to replace Rev. James Duncan whose health had deteriorated subsequent to

suffering a stroke, originally diagnosed as a nervous breakdown (Barentsen et al., ed. 2006; Saskatchewan Herald, 26 April 1881). By 1881, the small Mission had grown into a large community of approximately 3300 individuals (Abrams 1976). The town was replete with merchants, blacksmiths and politicians; nearly all of them European and Canadian settlers, and all itching to become successful citizens in western Canada. Upon his arrival, Rev. Sieveright acknowledged the need for a new Presbyterian church and a manse due to the rapidly growing population of the area (Barentsen et al., ed. 2006; WHS 2005). A new church was considered to be the immediate priority and by 1881, a new brick church (Figure 8) was established on or just north of what is now the

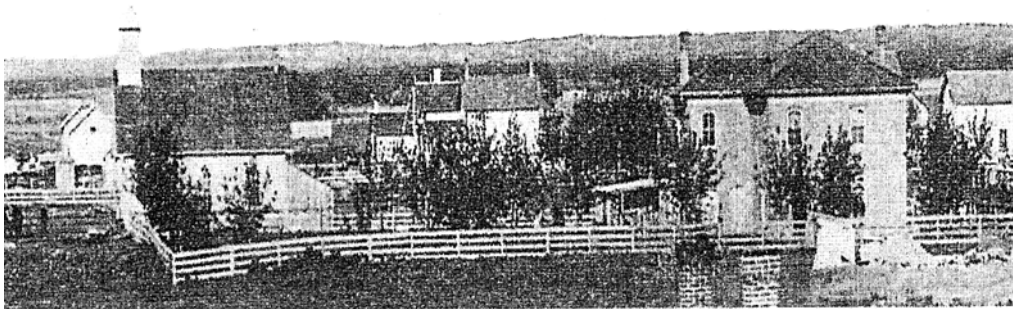


Figure 7. The 1881 Presbyterian Church (left) and the 1883 Manse (right)  
(Permission Barentsen et al. 2006. Photographer unknown)

intersection of Central Ave. and 11<sup>th</sup> St. W. (A 676 XVII.D.18 Saskatchewan Archives Board, Saskatchewan; Lamontagne et al.1985; WHS 2005). The church seated 180 congregation members of the Presbyterian Church in Prince Albert (Barentsen et al. 2006).

During this time, the Presbyterian Church made the decision to sell the majority of their river lot property leaving a city-block sized section of land in the center of what would become the business section of the city (Barentsen et al. 2006). Twenty metre (66



ft) lots were sold for fifty dollars each (Lamontagne et al., eds. 1985). It is likely that the profits went to pay for the construction of the 1881 Church and 1883 manse.

Subsequently, the Presbyterian property was commonly referred to as the Church Square (Rev. Sandy Scott, personal communication). The north and south boundaries of Church Square were delimited by 10<sup>th</sup> and 11<sup>th</sup> Sts. W, respectively and by alleyways to the west and east which would later become Central Aves A and B, respectively (Figure 9).

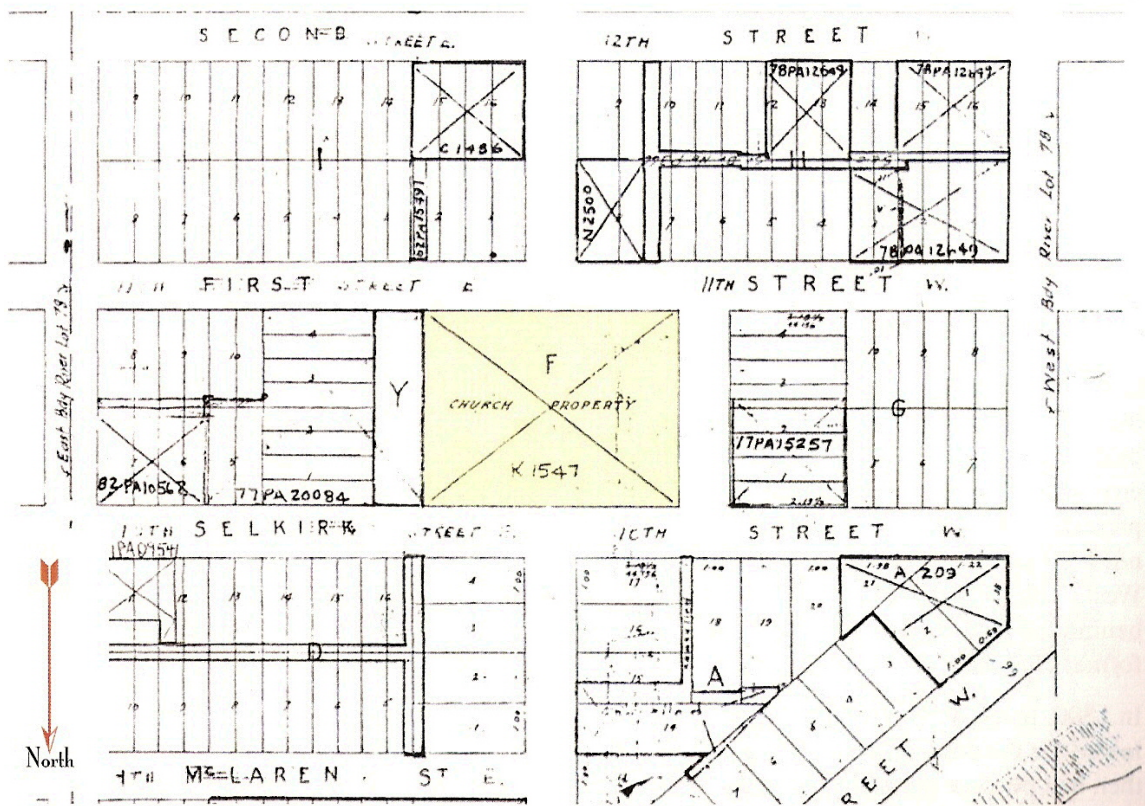


Figure 8. Presbyterian Church property circa 1880s. (Permission Prince Albert Historical Museum, courtesy of Norman Hill)

Due to subsequent financial difficulties, the Presbyterian Church was forced to sell 4856 m<sup>2</sup> (1.2 acres, or approximately one-fourth) of Church Square and the 1881



church to the town in order to pay off some accumulated debt (Abrams 1976; Barentsen et al. 2006). The approval for purchasing the property was signed on May 17, 1890 (Abrams 1976: 95). The church was later destroyed (Abrams 1976; Barentsen et al. 2006; Golder 2007).

#### ***2.2.4 The 1883 Manse***

A two-storey brick structure, the Presbyterian Manse (Figures 8 and 10) was completed in November 1883 (Barentsen et al., ed. 2006; Golder 2007; Prince Albert Times, 27 June 1883: 6; WHS 2005). Although Reverend Sieveright had overseen the

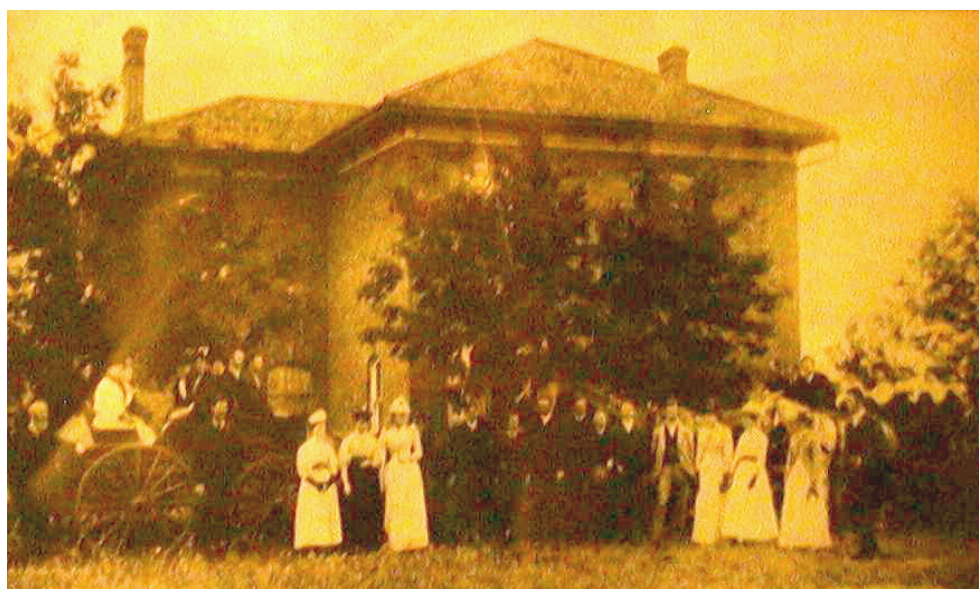


Figure 9. 1883 Presbyterian Manse, July 31 1891 (Courtesy St. Paul's Presbyterian Church)

majority of its construction, Reverend William McWilliam was the first minister to occupy the manse (Barentsen et al., ed. 2006; A 676 XVII.D.18 Saskatchewan Archives Board, Saskatchewan). This basementless building was situated on the northwest corner of 11<sup>th</sup> St. W. and Central Ave. and was occupied by the Church until 1906 when the present St. Paul's Presbyterian Church and manse were constructed (Barentsen et al., ed.

2006; WHS 2005). The location of the manse is evident on the 1909 Prince Albert Fire Insurance Map (WHS 2005). During the 1885 Métis rebellion, the manse and 1881 Church formed the focal point of the Fort of Refuge (Lamontagne et al. 1985; Barentsen et al. 2006). The fort was formed by a stockade of piled cordwood approximately 2.44 m (8 ft) high surrounding the manse and the church. (Byers 1920; Lamontagne et al. 1985). In addition to the construction of the fort, several buildings and structures were torn down to minimize the advantage of cover that could have been used by the Métis. Much of the population was held up inside the manse and Church buildings, fearing the worst.



Figure 10. NW Corner of 11th St. W. and Central Ave. Woolworth's Store and Avenue Hotel. Circa 1950. (Courtesy Saskatchewan Council for Archives and Archivists. Electronic reproduction. <http://scaa.usask.ca/gallery/mainstreet/princealbert.html>).

The entire town was in a state of what turned out to be unjustified pandemonium, largely based on hearsay and bolstered by racist attitudes. Contrary to popular belief, no attack was scheduled for Prince Albert. The “rebel advance” reported by a scout from Carlton was in fact a small herd of cattle and the only shot fired was by a man posted in the Church who was so terrified that he accidentally shot off his weapon upon hearing hammering from his comrades outside (Lamontagne et al. 1985).

Following the abandonment of the manse by the Presbyterian Church, the building was used as a private home and a boarding house (Prince Albert Daily Herald, 28 October 1950: 3; WHS 2005). In 1950, the manse was destroyed and replaced by the Woolworth's store (Figure 11) (Barentsen et al. 2006; Golder 2007; WHS 2005). The construction of the Prince Albert Forest Centre commenced on that location in 2003 (Government of Saskatchewan 2003).

### ***2.2.5 The 1891 Church***

Following the sale of the 1881 Church and several acres of land, the Church remained in financial dire straits. As such, the congregation and Rev. William Rochester took it upon themselves to raise the funds necessary to construct a new church large enough to accommodate the increased population. The cornerstone of St. Paul's Presbyterian Church (Figure 12) (Barentsen et al. 2006; Lamontagne et al. 1985).

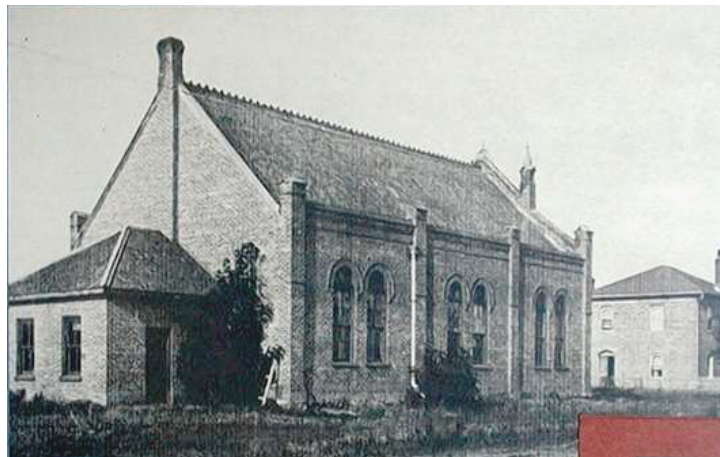


Figure 11. 1891 St. Paul's Presbyterian Church. Note manse in background. (Permission Prince Albert Historical Museum. Date and photographer unknown.)

was laid on July 1, 1891 and the building officially opened for worship the following year (A 676 XVII.D.18 Saskatchewan Archives Board, Saskatchewan; Barentsen et al.

2006; Golder 2007). A fairly ornate brick structure, St. Paul's Church was situated on the west corner at the intersection of 11<sup>th</sup> St. W. and Central Avenue A and was located directly west of the manse. The church was oriented in an east-west manner, with the entrance facing east towards Ave. A. The location and orientation are confirmed by several contemporary photographs, drawings, and maps (Figure 12). Upon the decision to build a larger Presbyterian Church in Prince Albert, the 1891 Church was sold in 1906 or shortly thereafter to Elmer Hicks who converted the building into an automobile repair shop (Golder 2007; WHS 2005). The building would later become property of Merlin Motors (WHS 2005), whose garage was located directly south of the church on 11<sup>th</sup> St. By 1954, the old church was transformed into an auto wrecking facility, City Auto Parts (Golder 2007; Prince Albert Herald, 24 March 1954). St. Paul's 1891 Presbyterian Church was demolished in 1955 (Golder 2007; Jamie Benson, personal communication). The reason for its demolition is not clear.

In October of 2004, a team of archaeologists from Golder Associates Ltd. (Saskatoon Branch) conducted the initial survey of the Forest Centre parking facilities and storm sewer system subsequent to the discovery of human remains at the site. During their assessment of the storm sewer trench, two brick features were observed (Figure 13). Brick, mortar, glass, wood, and metal remnants (some of which exhibited evidence of burning) were exposed suggesting the features represented the remains of a building demolition project (Golder 2007). The nature and location of these features and the types of artifacts observed suggests that this was the foundation for the 1891 Church (Golder 2007). Golder archaeologists also revealed the foundation of another brick structure claiming it to be the manse. However, this feature was situated west of the church foundations and the manse was located to the east of the 1891 Church on the

corner of 11<sup>th</sup> St. W. and Central Ave. The 1923 Western Canada Fire Underwriters Association map and the 1909 Prince Albert Fire Insurance Map depicts a somewhat T-shaped building west of the church on 11<sup>th</sup> St. W., but regrettably its identity is not known.



Figure 12. East wall profile of storm sewer trench.  
(Courtesy Golder Associates Ltd. October 2004.)

#### ***2.2.6 The 1906 Church***

The new century brought another major population boom to Prince Albert. The once small and humble Presbyterian Mission officially transformed into a city on October 8, 1904 (Barentsen et al., ed. 2006; Tourism Prince Albert 2005). Anticipating further population influx, Rev. Colin Young contracted the construction of a new and much larger church (Figure 14) to house the growing congregation (Barentsen et al., ed. 2006). A new manse was also constructed directly west of the church. Situated at the



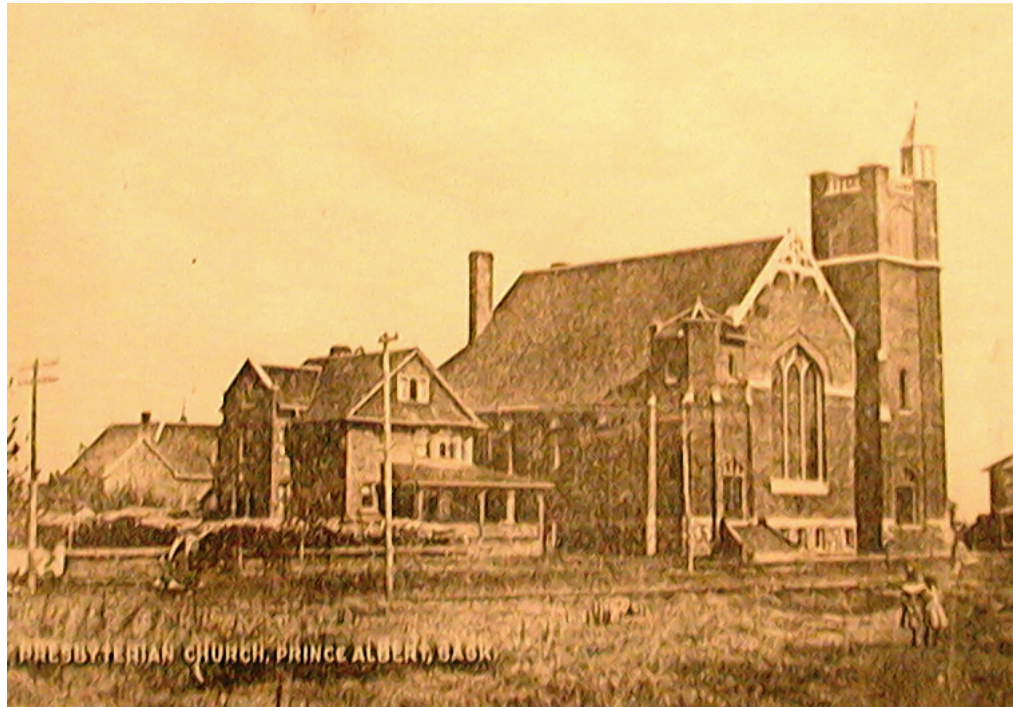


Figure 13. 1906 St. Paul's Presbyterian Church and Manse  
(Courtesy Prince Albert Historical Museum. Photographer unknown.)

corner of 12<sup>th</sup> St. and 1<sup>st</sup> Ave. E, St. Paul's Presbyterian Church was constructed to house 750 individuals and epitomizes Victorian-Gothic style (Barentsen et al., ed. 2006). This church is still in use today, although the associated manse was destroyed earlier.

### **2.3 Historical Location of the Forest Centre Cemetery**

Reconstruction of the Mission property and subsequent Presbyterian Church building construction not only offers valuable insight into Mission and Church growth and activities, but places the cemetery within a chronological timeframe. In addition, by comparing the location of the cemetery to the placement of the buildings, inference may be made as to which churches used the cemetery and subsequently, generating a possible end use date.

A detailed historic document search proved fruitful as early references to the cemetery verified the existence of a Mission burial ground. However, the official burial and baptismal records from Nisbet's period until 1925 do not appear to be in existence or their whereabouts are unknown. According to Rev. Sandy Scott and Norman Hill of St. Paul's Presbyterian Church in Prince Albert, all church records prior to 1925 were relocated to the United Church by the Clerk of the Session subsequent to Church Union which occurred in June of 1925. Apparently, these records were stored in a house which caught fire on January 26, 1926 (Norman Hill, personal communication). Although the house did not burn to the ground, none of its contents was salvageable. However, no accounts of a house fire were published in the Prince Albert Daily Herald during this time. It is also possible that the earliest records were destroyed during the fire of the Nisbet Academy, which housed Prince Albert's first historic museum. The blaze occurred on January 1, 1890 at approximately 2 am due to an over-stoked furnace (Abrams 1976; Barentsen et al. 2006).

### ***2.3.1 1866 to 1874: Rev. James Nisbet's Records***

The earliest reference to a burial is contained within a letter written by Rev. James Nisbet to his brother, Rev. Henry Nisbet. The letter is dated January 17<sup>th</sup>, 1867. It describes, in generous detail, his visit to an aboriginal man named Thomas who was dying from a primary infection of tuberculosis or 'galloping consumption' (J. Nisbet to H. Nisbet, letter, 17 January 1867, Nisbet Family Fonds, Glenbow Archives, Archives Society of Alberta 2009). He recounts how Thomas had asked to be baptized and how Rev. Nisbet had done so accordingly. Subsequent to the young man's death, Nisbet indicates that he was placed in charge of the remains and that he was to do with them as

he thought best (J. Nisbet to H. Nisbet, letter, 17 January 1867, Nisbet Family Fonds, Glenbow Archives, Archives Society of Alberta 2009). The remains were washed, dressed, brought back to the Mission, and placed within the Nisbet's original tent-house (see Section 2.2.1) where the body was to await burial. He describes the interment as follows:

On Monday mor[ning]—I prepared a rough coffin with the help of one of the boys – while the other two set about digging a grave at a place I selected. That was tough or rather hard work – the ground was frozen hard as rock three feet and a half down – so Mon. did not suffice to get through the frost. It was Tues. at 10 AM when the grave was ready – so we deposited the remains of poor Thomas in the earth...

[J. Nisbet to H. Nisbet, letter, 17 January 1867, Nisbet Family Fonds, Glenbow Archives, Archives Society of Alberta 2009]

Unfortunately, Rev. Nisbet does not indicate the exact location of the gravesite.

However, it is possible that the remains of Thomas were placed within consecrated ground as he had been baptized. This is also the earliest reference to coffin construction as performed by Rev. Nisbet.

The next reference to a burial is contained in Nisbet's diary, dated February 1, 1869. Nancy McKay, infant daughter of John and Mary McKay died at approximately seven o'clock in the morning (Rev. James Nisbet, personal diary, 1 February 1869, 1.11 Saskatchewan Archives Board). Rev. Nisbet constructed a coffin for Nancy which he finished at approximately three o'clock in the afternoon on the same date (Rev. James Nisbet, personal diary, 1 February 1869, 1.11 Saskatchewan Archives Board). Jasper Bear dug the grave (Rev. James Nisbet, personal diary, 1 February 1869, 1.11 Saskatchewan Archives Board).

Isabella (Bella) Turner died March 27, 1869 (Rev. James Nisbet, personal diary, 27 March 1869, 1.11 Saskatchewan Archives Board) just months after the death of her



twin sister, Annie. They were five years old. On March 29, 1869, Rev. Nisbet constructed Bella's coffin and two men prepared the grave (Rev. James Nisbet, personal diary, 29 March 1869, 1.11 Saskatchewan Archives Board). Her funeral was at two-thirty in the afternoon the same day. Annie had died at Carleton House and no mention was made of her burial. Presumably, she was buried at or near the HBC post.

James, an invalid Aboriginal man who had been baptized, confirmed, and hired at the Mission died on December 30, 1869 (The Home and Foreign Record, May 1870 Appendix: 3). His burial occurred on December 31, 1869 (The Home and Foreign Record, May 1870 Appendix: 3).

The infant of Rev. and Mrs. Vincent died in the early morning hours of October 7, 1873. (Rev. James Nisbet to Isabella Nisbet, letter, 7 October 1873, 1.111 SAB) Rev. Nisbet's description of this event provides an important reference regarding the interment of the individual. In a letter dated October 8, 1873 he wrote, "We were just leaving the graveyard with Mr. Vincent's child when I got the letters..." (Rev. James Nisbet to Isabella Nisbet, letter, 8 October 1873, 1.111 SAB) This not only acknowledges the existence of a formalized cemetery, but suggests that the individuals previously mentioned were likely buried within the same interment locality as one burial does not define a graveyard. Unfortunately, the location of the cemetery within the Mission property was never revealed in Nisbet's records.

### ***2.3.2 Post-1874 Accounts***

Accounts of the cemetery are few and far between subsequent to Rev. Nisbet's time at the Mission. Many of them are based on rumour and hearsay. One of the earliest references may be found in the first issue of the Prince Albert Times:

In the old Indian graveyard now in the very heart of Prince Albert were laid to rest the dusky warrior, and the dark-eyed maid of the prairie and forest in days gone by. Of late years, and since the incoming of whites, no interments have been made in this last resting place of the Indian in the past, but many graves are still easily distinguishable by the depression of the soil, and the falling in of the peculiar gables or roofs by which they were covered. But this old cemetery of the Crees has been invaded by the surveyor and the whole area has been recently laid out and marked into city lots. [Prince Albert Times, 1 Nov 1882:5; WHS 2005:19]

This article certainly seems to make reference to the Forest Centre cemetery; however there are details within the description that place doubt on its legitimacy. It is interesting to note that if the article is actually referring to the Presbyterian Mission cemetery, only eight years had passed between the departure of Rev. Nisbet and the publishing date of the newspaper. The location would seem to correlate to the site of the Forest Centre burials being situated in the downtown core of the city. Still, Prince Albert is home to a number of early burials situated within the city limits. In addition, the article suggests that these interments were strictly of First Nations origin and were characterized by overlying roofs or gables. The Forest Centre cemetery was not a traditional First Nations burial ground (See Chapter Three) and contained individuals of Aboriginal and European decent (See Chapter Five). Furthermore, there is no evidence that any of the Forest Centre graves were complemented by above- surface wooden structures.

Although not situated in the downtown core, the Monkey Hill burials (FhNk-4) seem to better match the description printed in the Prince Albert Times. Situated on the top of “Monkey Hill” in the Prince Albert city golf course, FhNk-4 consisted of five burials covered with logs (Saskatchewan Heritage Resources Unit [HRU], Saskatchewan Archaeological Resource Record [SARR] 1961). The logs may have been the remnants of the gables aforementioned in the newspaper article. The burials were associated with

iron axes, ceramics and flint flakes (HRU, SARR 1961). Such grave inclusions are suggestive of a First Nations burial style. Submitted in 1961, the site form suggests the region was subsequently bulldozed and presumably, the graves were destroyed. Unfortunately, there is no additional information regarding this group of burials.

As the city expanded and contemporary downtown infrastructure was developed, additional accounts of unearthed human remains were published in a series of newspaper articles. An item in the Prince Albert Daily Herald written by Richmond Mayson states: “Around [the 1891 St. Paul’s Presbyterian Church] to the south, a long what is now Eleventh street, to the west and north was the settlements burial ground. When Eleventh Street was constructed, several bodies were disturbed.” (Golder 2007; Prince Albert Daily Herald, 23 June 1958:4; WHS 2005:21) In a subsequent article, Mayson makes another reference to a cemetery being located on the site of the 1891 church (Prince Albert Daily Herald, 23 July 1958; WHS 2005). These reports place the burials in direct association with the Forest Centre cemetery suggesting they were likely part of the same whole. Later testimonies also place unearthed human remains directly adjacent to the Forest Centre cemetery. “A graveyard was uncovered when the Avenue Hotel was extended. This graveyard was part of the property of the Presbyterian Church, which was located on Central Ave. ‘A’ at one time.” (Benson et al. 1972: 3; Golder 2007; WHS 2005) The Avenue Hotel was situated on Central Ave. and extended westward towards Central Ave. A. As seen in Figure 11, the building was located directly north of the Woolworth’s building which had previously been the location of the Presbyterian manse (See Section 2.2.4). According to Prince Albert Genealogical Society members, a man named Gerald Barden who had worked for the Presbyterian Church drove the dray that conveyed the remains from the site of the Avenue Hotel to

the South Hill Cemetery (Prince Albert Genealogical Society members, Personal communication, 18 April 2008). Unfortunately, which burials were moved remains unidentified. Members of the Prince Albert Historical Society had also recalled human remains being revealed during the development of structures along 11<sup>th</sup> St. W., including the construction of the Sportsman Bowl which is located at 19 11<sup>th</sup> St. W. (Jamie Benson, personal communication 2007; Golder 2007).

These accounts not only affirm the presence of a Presbyterian cemetery, but indicate that additional graves had been disturbed prior to the excavation in 2005. This suggests that the boundaries of the Forest Centre cemetery had extended beyond what had been excavated during the project conducted by Western Heritage Services Inc. Unfortunately, no concrete evidence exists to verify the existence of these alleged burials.

## **2.4 Archaeological Evidence**

The first *in situ* burial (Grave 26) unearthed during CRM salvage operations was exhumed by archaeologists from Golder Associates in 2004 ( Figure 1, Figure 15 and Figure 16). The remains consisted of two articulated feet and two associated tibiae and fibulae which had fallen out from the graveshaft into the excavated sewer-line trench formed by back hoe activity (Golder 2007). Osteological specifics of these remains will be discussed in Chapter Five. This grave is not only an important osteological feature but is a crucial piece of chronological evidence. In Figure 16, the parking facility construction plans are superimposed by the 1923 Western Canada Fire Underwriters Association map of the area. This places the south wall of the 1891 St. Paul's



Figure 14. Skeletal remains of first grave found (Courtesy Golder Associates 2007)

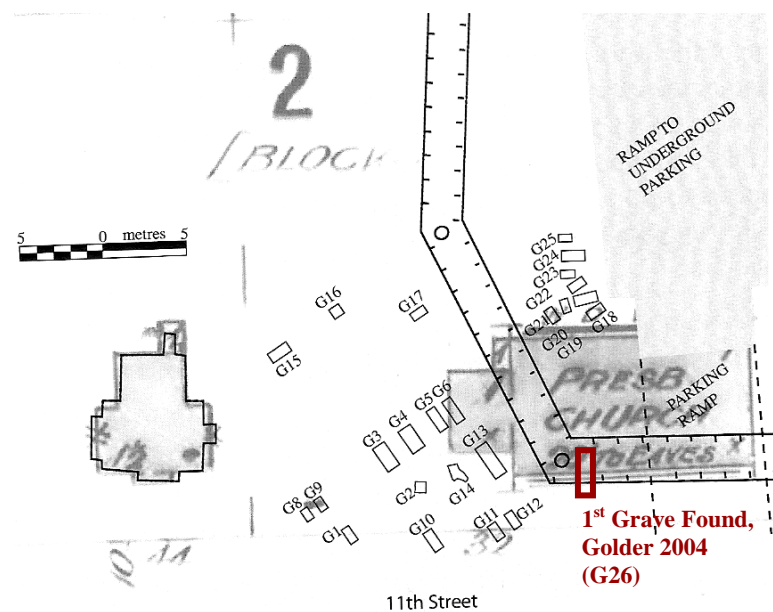


Figure 15. Construction plans and cemetery map superimposed over the 1923 Western Canada Fire Underwriters Association map (Western Heritage Services 2005)

Presbyterian Church (See Section 2.2.5) directly over the south boundary of the sewer-line trench. This relationship was confirmed by the presence of red brick foundation along the entire length of the trench (Golder 2007). When the first grave found is superimposed onto these maps, it places the grave in immediate conflict with the church foundations. Unfortunately, Golder Associates does not indicate the depth of the burial or if it was directly affiliated with any brick debris. However, based on the photographs and scaled drawings contained in the report, it appears that the grave was located at some depth comparable to the bottom-most foundation remnants or even deeper. This has yet to be confirmed by the senior archaeologist at Golder Associates. Nevertheless, the placement of the grave in conflict with the church foundations indicates that the 1891 Church was constructed overtop of the burial. Consequentially, the cemetery cannot date beyond the construction of the church building. It is likely that the cemetery had not been in use for some time previous to its erection as the Church would not knowingly build a structure over consecrated ground.

During excavation of the cemetery, five coffins were found to be empty. This indicates that the remains were moved elsewhere. Within a graveshaft environment located deep within the soil matrix, a wooden casket would decompose long before the contained skeletal remains (E.G. Walker, personal communication 2006). As such, the absence of human remains was not due to decomposition. In earlier times, it was not an uncommon practice for families leaving an area to move their deceased loved ones with them (E.G. Walker, personal communication 2006). In this case, the movement of remains may have been due to the establishment of another Presbyterian cemetery within city limits: The South Hill Cemetery.

## **2.5 South Hill Cemetery Records**

Prior to becoming property of the City of Prince Albert, the South Hill Cemetery was property of the Presbyterian Church. Therefore, in order to determine a period of use for the Forest Centre cemetery, one must determine when the South Hill cemetery was established. The cemetery was used by the Church until 1899 and subsequently was given to the city as a public burial ground (Davidson [City Clerk], correspondence, 9 December 1913, Prince Albert Historical Museum Archives: 2/23). Unfortunately, the City of Prince Albert does not have the precise date of its inception on record (Prince Albert Community Services, personal communication 2007).

The earliest burial on record for the South Hill cemetery is registered to George Lee who was born in the year 1813 and died November 30, 1871 (South Hill Cemetery burial registry 2006, Courtesy of the Saskatchewan Genealogical Society [SGS]). This places his time of death during Rev. Nisbet's time at the Mission. However, there is no record of his death within Nisbet's correspondence or personal diary. Furthermore, there is no marker denoting Mr. Lee's place of interment within the South Hill Cemetery although this is hardly surprising given the date of death. No date of burial was recorded for this individual.

Jessie Pritchard was the first of three siblings registered at the South Hill Cemetery (Figure 17). Jessie was born on August 7, 1875 and died October 20, 1875 (South Hill Cemetery burial registry 2006, Courtesy of the SGS). According to the registry, the individual was interred the same day. Albert, Mary, and Alma Pritchard died on September 7, 1876, January 15, 1879, and August 1, 1886 respectively. As observed in Figure 17, the monument is of recent manufacture so it is difficult to verify the dates of burial.



Figure 16. Pritchard Family grave monument

According to the burial registry, the South Hill cemetery does not appear to have been used regularly until 1885. Up until this point, large gaps of time occur between burials and the date of death and the date of burial always occur on the same date. This point does not necessarily suggest inaccuracy, as burial on the same day as death was not an uncommon procedure. For example, Rev. Nisbet had interred Nancy McKay the same day as her passing (Section 2.3.1). In addition, the early portion of the burial record may have been based on the information inscribed on the gravemakers. The earliest marker, not necessarily the earliest date of burial, commemorates Sarah Phillips



who died on June 29, 1888. The marker was manufactured by Somerville and Co. of Brandon, Manitoba. However, according to the company's website, Somerville and Co. was established in 1896 by William Somerville who made sales and delivered his product by rail and horse and buggy (Somerville Memorials 2009). This would suggest that all gravemarkers manufactured by Somerville and Co. must have been mounted after this time. As such, graves with these markers cannot be of assistance when determining the establishment of the South Hill Cemetery as too many reasons for their purchase may be argued (i.e. Placed after movement to South Hill cemetery, marker was bought when affordable, grave commemoration upgrade).

## **2.6 Summary**

Established in 1866, the Prince Albert Presbyterian Mission played an integral role in the settling of the West. Originally founded as a small Mission to the local First Nation's people, it quickly grew to become one of the largest settlements in the province. Larger structures were constructed to accommodate the ever-increasing population. Reconstruction of the Mission building sequence places the Forest Centre cemetery at the heart of the Presbyterian Church cluster in Prince Albert. Its location and proximity to Mission structures suggest it was established at an early date by Rev. James Nisbet. His letters and diary contain detailed information regarding interments during his time at the Mission and affirm the presence of a cemetery. Archaeological evidence produced during the 2004 and 2005 excavations of the site suggests that at least one burial was in conflict with the construction of the 1891 Church. Consequentially, it is very unlikely that the cemetery was active beyond that date. Contemporary accounts of unearthed burials during various construction episodes

directly adjacent to the cemetery suggest that it had once been considerably larger than what was revealed during the parking lot development process. The establishment of the South Hill Cemetery by the Presbyterian Church in Prince Albert likely occurred during the mid-late 1880s based on burial frequency. This suggests that the Forest Centre cemetery had been out of use by this time. Unfortunately, the earliest grave marker manufacture dates are considerably later than the dates of death inscribed upon them and as such cannot be used as artifacts of verification.

## **CHAPTER THREE**

### **Cemetery Description**

#### **3.1 Cemetery Organization**

##### ***3.1.1 Cemetery Arrangement and Grave Orientation***

Figure 19 illustrates the arrangement of the Forest Centre cemetery, which consisted of three major clusters of graves. The grave exhumed by Golder Associates in 2004 could not be incorporated into one of the clusters as its orientation was not taken during excavation and it was not immediately recognizable as belonging to one of the three clusters. Western Heritage Services had identified five clusters although this seemed to be subjectively based on grave placement within the cemetery rather than on any identifying feature.

Grave orientation and arrangement was the basis for cluster determination. It was assumed that burials possessing a similar orientation and arrangement were interred during a common period of time. Bybee (2002) examines the transition between pioneer and transitional cemetery arrangement in the eastern and southern United States. Pioneer cemeteries were defined by a restrictive use of space whereas later burial grounds, termed transitional cemeteries, were characterized by the more expansive and distinctive organization of graves into rows and family plots (Bybee 2002). The Forest Centre cemetery exhibits two distinct burial patterns which reflect these forms of cemetery arrangement. Cluster C (Figure 19) is a tightly organized and variable

grouping which exhibits multiple orientations and is not arranged into distinct rows.

This system of interment arrangement is consistent with that of a Pioneer cemetery.

Cluster A is arrayed into definitive rows and each grave shares the same orientation.

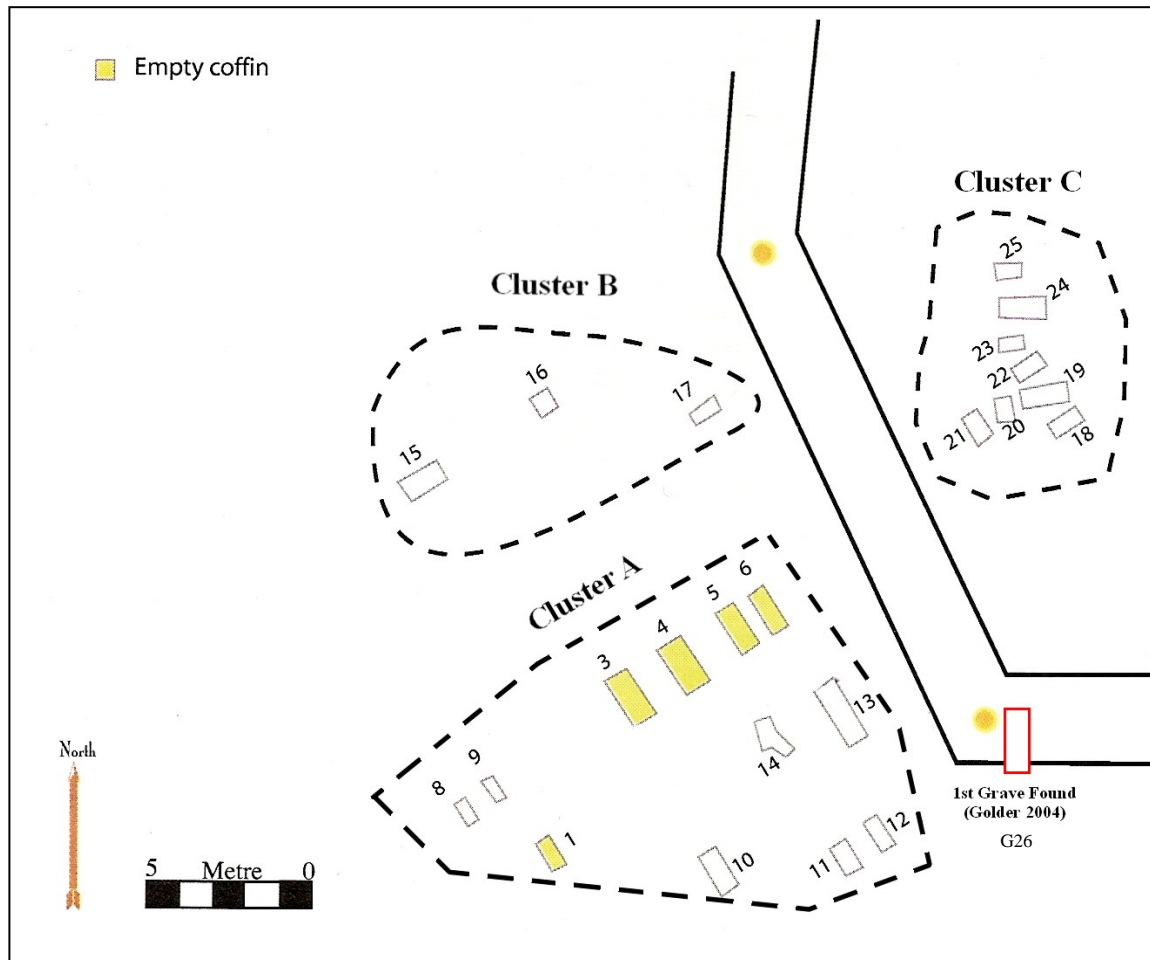


Figure 17. Map of cemetery depicting cluster locations.  
(Adapted from Western Heritage Services Inc. 2005)

This form of organization is consistent with that of a transitional cemetery. Cluster B is not immediately recognizable as belonging to a pioneer or transitional arrangement as only one of the three burials within this cluster has an accurately defined orientation. However based on its arrangement, Cluster B would seem to be more closely related to Cluster C. The presence of two discrete burial configurations suggests that there are at least two chronological interment traditions, with Cluster C predating Cluster A.

In Christian burials, the orientation of the body within the grave was based on scripture dictated by St. Paul regarding the Last Judgment (Quigley 1996). The individual was to be interred with the feet directed eastward so that they will face Christ when they arise on Judgment Day (Brock and Schwartz 1991; Hopkins 2004; Quigley 1996). The clergy were buried in a westward orientation, so that they could look after their congregations (Quigley 1996). This form of orientation is characteristic of transitional stage burials (Bybee 2004). However, these arrangements do not appear to have been strictly adhered to. Quigley (1996) provides numerous cases where individuals were buried in rather unconventional arrangements. Individuals interred within the St. Vital Cemetery were primarily oriented in a northwest to southwest manner (Hopkins 2004). The Forest Centre cemetery presents numerous burial orientations. Each individual within Cluster A was oriented on a northwest to southeast axis, the feet facing the southeast pole. In burials where no skeletal remains were present, the orientation of the coffin still followed this same pattern. Cluster B presents opposite orientations. Individual Fifteen appears to have been oriented southwest, whereas Individual Sixteen was buried facing the northeast. Grave Seventeen was disturbed and therefore, no accurate orientation could be obtained. In Cluster C, five individuals presented southwest to northeast, two individuals presented southeast to

northwest and one individual was oriented west to east. In addition to the cemetery arrangement, this difference in orientation between the two primary clusters also infers that they were established during two different periods of time.

### ***3.1.2 Grave Depth***

Within a formal burial context, the depth of a grave shaft is often considered as an indicator of seasonality. During the winter months, it is difficult to shovel past the frozen surface of the ground. Theoretically, graves would be somewhat shallower to reduce the amount of energy and effort required to bury the dead. However, even during warmer weather grave depths were variable. Often grave shafts were dug just deep enough to deter animal scavenging (Bybee 2002). As such it is difficult to determine seasonality based on grave shaft depth. In addition, the original ground surface of the Forest Centre cemetery had been altered at least once prior to excavation. Consequentially, it is impossible to determine the original depth from surface. As a result, the depth of burial will not be considered in further detail.

## **3.2 Burial Style**

### ***3.2.1 Coffin Construction***

Each individual was interred within a coffin. Three primary styles of coffins were present in the Forest Centre cemetery: rectangular, hexagonal, and a modified or custom-fit rectangular. The majority of individuals were interred within a rectangular casket, which was comprised of four planks forming the walls and either a solid piece or a slatted bottom and top. Only three individuals were contained within hexagonal coffins. These consisted of six planks forming the walls and a slatted top and bottom.

Six modified or custom-fit coffins were revealed which varied in size and appearance. Of these, three forms were identified. Note that coffin nails and hardware will be discussed in Section 4.3.

#### *3.2.1.1 Psuedo-Hexagonal*

The pseudo-hexagonal coffins were rectangular in construction albeit they possessed curvilinear side walls created by the presence of longitudinal slits (Figure 20) at or near the shoulder or elbow areas. By curving the wood around these more pronounced areas, the carpenter created a custom-fit coffin for the individual. In comparison to the hexagonal coffin, less wood and fewer nails were used in this form of construction. This would have been an important feature as materials were limited in such isolated circumstances. The number of slits cut into the wall varied from two to five and averaged five centimeters in width. Graves Eleven, Thirteen, Twenty, and Twenty-Three contained this type of coffin.



Figure 18. Pseudo-hexagonal coffin exhibiting longitudinal slits (Courtesy Western Heritage Services Inc., 2005)

### *3.2.1.2 Pseudo-hexagonal with Double Walls and Head Cradle*

Grave Fourteen contained a pseudo-hexagonal coffin that possessed double walls and was characterized by a particularly unique head cradle (Figure 21). The coffin consisted of a rectangular exterior frame which contained an interior pseudo-hexagonal structure. A thick board was positioned at the neck to assist in supporting the head.

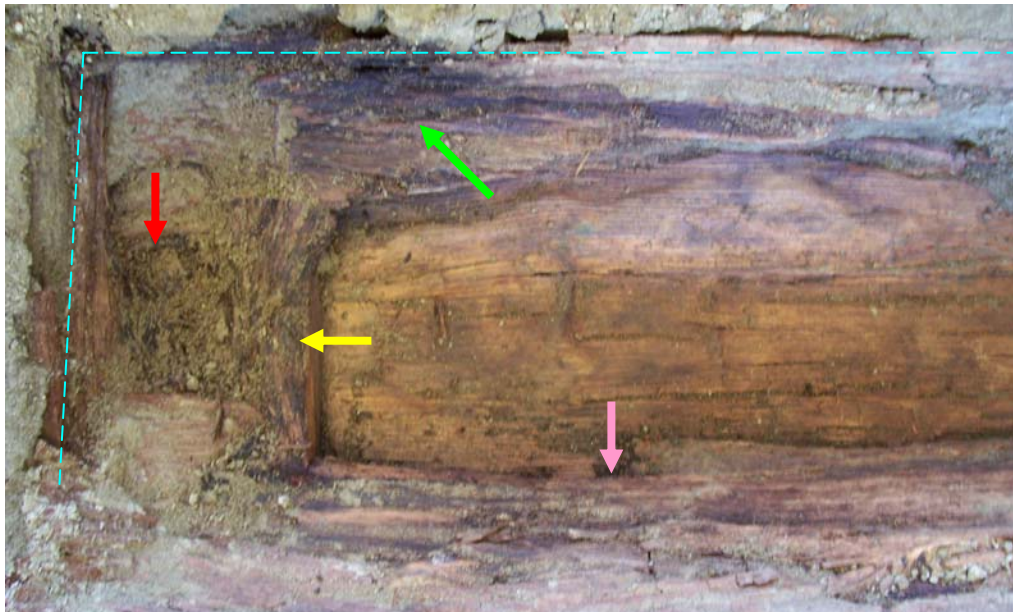


Figure 19. Pseudo-hexagonal coffin with double walls and head cradle. Neck prop (yellow arrow). Head cradle (red arrow). Thick double wall (green arrow). Region of longitudinal slits (pink arrow). Exterior margins (blue dotted line).

(Courtesy Western Heritage Services Inc., 2005)

This board also formed the inferior wall of the head cradle. The cradle was a space between the exterior frame, the neck prop, the interior walls, and the floor of the coffin. This space, in conjunction with the neck prop allowed the head to remain in a straight and supine position whilst interred. The side walls also exhibited longitudinal slits, creating the pseudo-hexagonal shape. It is difficult to ascertain if this coffin was created as one piece or was formed by the combination of two separate coffins. If it was



the product of an amalgamation, it may have been due to sizing issues. However, this idea seems ludicrous as the carpenter would have saved a great deal of energy and materials by just building the exterior frame to fit and maintaining a rectangular shape. Therefore, it is more plausible to assume that the coffin was constructed as a single project and that a great deal of effort and thought went into its creation.

### *3.2.1.3 Double-walled*

The coffin found in Grave Nineteen was also double-walled with an exterior rectangular frame and an interior structure that was curved to fit the body. This coffin differed as it did not contain an area of modification for the cranium and its walls were slatted nearly the entire length, creating a somewhat elliptical interior shape. Unfortunately, the pedal end of the coffin was sheared off by underground parking ramp construction.

The presence of tailored coffins suggests that a great deal of thought and care went into their construction. It is possible that the carpenter had known the deceased and wanted to create something special to their memory. Rev. Nisbet's letters and journal indicate that he had built coffins for the deceased at the Mission (Rev. James Nisbet to Rev. Henry Nisbet, letter, 17 January 1867, Nisbet Family Fonds, Glenbow Archives, Archives Society of Alberta 2009; Rev. James Nisbet, personal diary, 1 February 1869, 1.11 Saskatchewan Archives Board; Rev. James Nisbet to Isabella Nisbet, letter, 29 March 1869, 1.11 Saskatchewan Archives Board). Unfortunately, he does not provide a description of their construction. The Prince Albert Historical Museum has examples of Rev. Nisbet's woodwork; however it doesn't provide any

clues pertaining to coffin manufacture. No maker's marks were evident on the wood to indicate they had been commercially produced.

### **3.3 Mortuary Material**

Apart from nails and coffin hardware, the mortuary and cultural material analysis was performed by Mark MacKenzie of the Western Development Museum in 2005.

Analysis of the nails and coffin hardware was performed by archaeologists at Western Heritage Services. A detailed, grave-by-grave description of the artifacts may be found in Western Heritage Services 2005 excavation report, *Archaeological Investigation of a Presbyterian Cemetery Discovered at the Saskatchewan Forest Centre Building HRIA Permit 05-56*. As such, the following two sections are a summary of the cultural materials found at the cemetery.

#### ***3.3.1 Nails and Other Coffin Hardware***

##### ***3.3.1.1 Nails***

All the coffin nails were machine stamped and were predominantly one size (WHS 2005). With the exception of six nails, the remaining all had “modern” machine cut rectangular heads (Nelson 1966; WHS 2005). Grave Three contained six round headed nails (WHS 2005). Unfortunately, it is not clear if these nails were wire drawn or if they were an earlier form of machine cut nail (i.e. handmade head, rose head). This information could have helped to identify grave cluster chronology.

#### *3.3.1.2 Screws*

Screws were recovered from a number of graves. There is little description of them within Western Heritage Service's report. Therefore, the type of screw heads present could not be identified. However, Grave Sixteen contained a six-sided screw head (WHS 2005). On average, the screws measured 7.6 cm in length and 1.5 cm in diameter (WHS 2005: 97).

#### *3.3.1.3 Tacks*

Copper tacks were frequently recovered within the cemetery assemblage. Cloth fragments adhered to a number of the tacks, suggesting they were used to attach fabric linings to the inside of the coffins.

#### *3.3.1.4 Hinges*

Seven hinges were uncovered from five graves. Classified as butt hinges (Philibin 2006), they exhibited three holes on each plate. With the exception of Grave Six, which was affiliated with screws, the remaining hinges were attached with nails (WHS 2005). It is interesting to note that all of these graves were situated within Cluster A (Figure 19) and that four of these coffins did not contain any human remains. These characteristics also suggest that Cluster A may be a later group of interments.

### ***3.3.2 Coffin Textiles and Materials***

#### *3.3.2.1 Lining and Wood Shavings*

A great deal of fabric was preserved within the Forest Centre interments. Unfortunately, very little of the cloth was analyzed. This type of information would

have been useful to determine qualities such as function (i.e. coffin lining, clothing) or socioeconomic status (i.e. elite good). However, in some situations, the function was clear. For example, Graves Ten and Thirteen contained copper tacks with cloth fragments adhered to their posterior surface. As such, it was assumed that the cloth served as a decorative lining for the coffin.

Wood shavings were recovered from Graves Nine and Eleven. This anomaly was also found at the St. Vital Cemetery and a cemetery in Medicine Hat (Hopkins 2004; WHS 2005). Wood shavings and coffin construction debris were often placed in the coffin by carpenters due to superstition (WHS 2005). It was believed these construction materials could mortally endanger the next individual who came into contact with them (Coffin 1976; WHS 2005).

#### *3.3.2.2 Shrouding*

Grave Twenty contained a significant amount of purple textile material. Mark MacKenzie identified it as non-mercerized cotton with an open weave and suggested it may have been used as a coffin liner (WHS 2005). However, the cloth was wrapped around the two individuals (see Chapter Five), separating them. As such, this fabric was used more as a swaddling or shrouding and was separate from the coffin materials.

#### *3.3.2.3 Mattress*

A mattress was recovered from Grave Eighteen. The excavators noted that it did not cushion the entire length of the body and ended near the pelvic region (WHS 2005). As such, it was thought that its purpose was to slightly incline the body (WHS 2005), possibly for viewing purposes. Testing performed by Mark MacKenzie and Amanda

Boechler indicated that the fabric forming the shell of the mattress was a dark-coloured silk (WHS 2005). The interior of the mattress was filled with down feathers, likely duck or goose (WHS 2005). It is unclear whether the item was machine or hand manufactured.

#### *3.3.2.4 Coffin Wood Analysis*

The coffin wood was identified as western red cedar based on external morphological characteristics (WHS 2005). However, it is possible that decomposition and the taphonomic environment were not taken into account. A microscopic analysis may have helped to provide further evidence in this matter. This identification is somewhat tentative given the wood species available in the Prince Albert area. It is likely that the majority of the coffins were hand-made locally, however if the analysis is correct it is possible that the burial containers or at very least the building materials were manufactured and shipped in from elsewhere.

### **3.4 Cultural Material**

#### *3.4.1 Buttons*

Twenty-seven buttons were found from seven individuals. A variety of different button types and materials were recovered, including white glass, Abalone shell, and metal. The shell buttons were distinguished as elite goods (WHS 2005). However, only one set of buttons was able to provide a definitive date. Grave Thirteen contained two four-holed, tin -opalized, white glass, patterned buttons (WHS 2005). The front surface of the button exhibited a calico pattern produced in black ink (WHS 2005) (Figure 22). This style of button became popular in the 1840s; however Mark

MacKenzie suggested that these samples are likely representative of 1870 – 1890. This timeframe corresponds to the proposed date of use for the cemetery.



Figure 20. Grave 13 - Calico patterned button at left iliosacral junction.  
(Courtesy Western Heritage Services Inc., 2005)

### ***3.4.2 Pins***

Eight pins were recovered from five individuals. Several pins were complete enough to have a function ascribed. A broach pin, hair pin, and dress making pins were identified. The presence of dress-making pins suggests that the clothes of some individuals may have been modified or specifically created to clothe the deceased. Unfortunately, with the exception of Grave Twenty-Five, no identifiable clothing was preserved to affirm this hypothesis.

### ***3.4.3 Buckles***

One buckle was recovered from Grave Sixteen. It was ferrous, unplated and covered with a twilled weave textile (WHS 2005). Mark MacKenzie noted that this type of buckle was designed for “hard wearing” (WHS 2005: 126).

#### ***3.4.4 Textiles***

A significant amount of textiles were found during excavation. The vast majority were recovered in the form of small fragments. Only several ‘species’ of cloth that were definitely not associated with coffin construction could be assessed and identified. Grave Sixteen contained a small, deteriorated fragment of cloth that contained sand (likely from overburden) and yellow moth eggs (WHS 2005). By way of thorough examination and a burn test, the fabric was identified as napped, homespun wool (WHS 2005). The remaining textiles in this category were recovered from Grave Twenty-Five.

#### ***3.4.5 Grave Twenty-Five Assemblage***

Grave Twenty-Five was significant due to its osteological content (which will be described in Chapter Five) and its extensive artifact assemblage. As such, each artifact will be considered in somewhat more detail. Upon reaching stage three of the grave complex, the excavators discovered the post-cranial remains were covered by a Hudson’s Bay Company blanket (Figure 23). It is possible that the inclusion of this blanket was responsible for the excellent textile preservation underneath. To ensure the blanket remained intact, the decision was made to remove the grave in one solid block and excavate the coffin and its contents in a laboratory setting. This decision proved fruitful as minute osteological and artifactual components were recovered that may have been missed if the grave had been excavated in the field. Each artifact from this assemblage was transported to the Western Development Museum for analysis.



Figure 21. Grave Twenty-Five *in situ*. Note Hudson's Bay Company blanket.

#### *3.4.5.1 Hudson's Bay Company Blanket*

The wool blanket was wrapped around the body, covering the post-cranial aspect of the individual. It has been suggested that the blanket may have covered the entire body at burial; however, the blanket only exhibited a single indigo-coloured point value on its lateral edge. The total length of the blanket was 112 cm (WHS 2005). A complete single point blanket was approximately 117 cm (Tichenor 2005). Therefore it is more probable that the head remained visible at interment. Points are black or indigo lines found on the lateral edge of a wool trade blanket that indicated the weight, size and some would argue, the quality of the item. (Payne 2002). The once white blanket exhibited a single blue heading or stripe at each end. Unfortunately, HBC blankets are not datable by the colour scheme alone. To accurately identify and date a trade blanket, the label is required (Hudson's Bay Company 2009; WHS 2005). No blanket label was recovered during the excavation.



#### 3.4.5.2 Clothing

The clothing consisted of a pair of horizontally striped pants associated with a pair of leggings that commenced just below the knees (Figure 24). The top and bottom portions of the pants were constructed of brown cotton (WHS 2005). A strip of blue

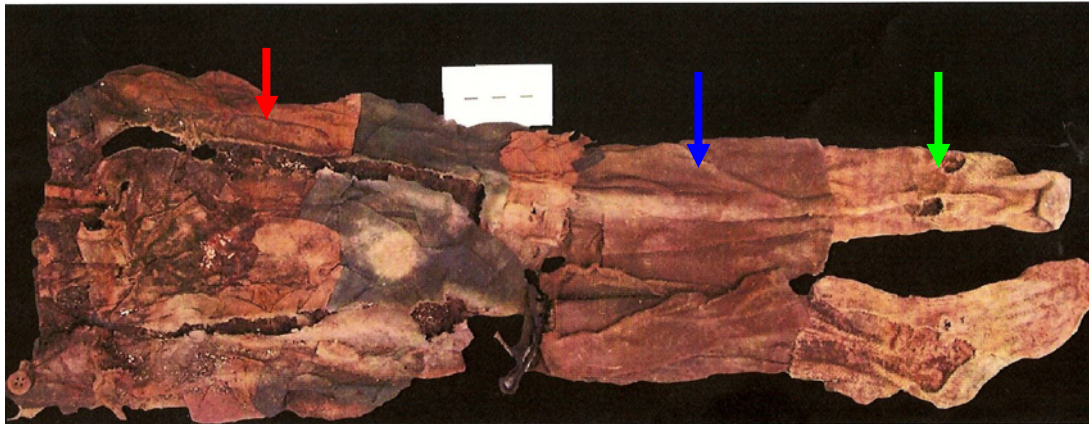


Figure 22. Grave Twenty-Five clothing. (Red arrow) Pants, (Blue arrow) Leggings, (Green arrow) Socks (Courtesy Western Heritage Services, Inc.)

indigo-dyed, non-mercerized cotton fabric separated these portions near the thigh area (WHS 2005). Mark MacKenzie suggested that the indigo-coloured material used in these pants may have made this item a high-quality good (WHS 2005). A fair bit of material was used in their creation; however, they were sewn together using a loose stitch. As such, this item was not manufactured for everyday wear (WHS 2005). It is conceivable that they were sewn specifically to clothe the deceased individual. It is also possible that the striped nature of the pants was chosen to compliment the overlaying HBC blanket. A wooden four-holed button was revealed at the top margin of the pants and wooden remnants suggest a second button may also have been present at one point (WHS 2005).

The top edge of the leggings was formed by a leather strap joined by a small buckle. A complete strap and buckle was only recovered from the left legging and it is

assumed that the right legging also exhibited a buckle (WHS 2005). The remainder of the leggings were fashioned from brown-dyed mercerized cotton (WHS 2005). A seam sewn using a basting stitch was identified along the center of each item (WHS 2005). The presence of this type of stitch suggests that these garments were not created for everyday use as the basting stitch is not a particularly strong stitch (WHS 2005). The leggings may have been altered to fit the individual (WHS 2005), however it is more plausible to assume that they were created to dress the deceased.

#### *3.4.5.3 Socks*

Wool socks (Figure 24) were found covering the tarsals of the individuals. Despite several holes and a large tear, the socks were remarkably complete. Nonuniformity of the stockingette stitches suggests the socks were handknit (WHS 2005). It appears that they were knit from the toe upwards.

#### *3.4.5.4 Adornment*

A small washer-like pendant (Figure 25) was recovered from underneath the left side of the cranium near the neck. Made of a cuperous alloy (WHS 2005), the pendant sported a small notch cut from its outer margin. In addition, a copper criss-cross ring (Figure 25) was found around the right middle phalanx (WHS 2005).



Figure 23. Grave Twenty-Five pendant (top) and ring (bottom)  
(Courtesy Western Heritage Services, Inc.)

#### *3.4.5.5 Miscellaneous*

Several miscellaneous fragments of cloth including a scrap of napped homespun wool fabric were recovered. They could not be associated with any particular item. In addition, a small piece of brown-coloured cotton fabric was recovered that exhibited an ornamental knot with braids extending from it (WHS 2005). Its function is unknown.

### **3.5 Why Is This Not a Traditional First Nation's Burial?**

From the onset of the project, it was important to determine which cultural group the cemetery was affiliated with as each group has different protocols that must be followed when dealing with the deceased. In addition, it was important to identify which group must take ultimate responsibility for reburial. There are a number of characteristics which indicated that the Forest Centre cemetery was not a traditional First Nations burial and was affiliated with the Presbyterian Church in Prince Albert.

### ***3.5.1 Location***

As discussed in Chapter Two, the cemetery was situated within the crux of Mission activity. Prior to officially settling, Rev. Nisbet and his party entered into talks with the local Cree elders and community (See Section 2.1). No mention of sacred grounds or burials were made mention of during discussion. The concern of the Cree was primarily with that of the incoming European population. If a known First Nation's burial ground was located nearby it is extremely unlikely that the Native inhabitants would have invited the missionaries to settle on top of it. In addition, Rev. Nisbet clearly respected Cree customs and certainly would not have disturbed their burials or intentionally insulted them in any way.

### ***3.5.2 Coffins and Burial Style***

The presence of coffins further indicates that the cemetery was established in a European Christian style. Although coffins of different shapes and forms have been used in Europe and Asia for thousands of years, they are extremely rare among Indigenous peoples on the North American continent. When present, they did not take the same form as traditional European coffins. Box burials were large chests containing an opening for food offerings to provide the deceased with nourishment in the afterlife (Yarrow 1880). Found in areas such as the state of New York, box burials were not interred beneath the ground surface (Yarrow 1880). Other forms of container burial present in North American First Nations culture include canoe burials, urn burials, and hollow log burials (Yarrow 1880). However, none of these types are found on the Northern Plains.

Rev. Nisbet indicates that there were at least three types of Cree groups inhabiting the territory surrounding the Mission. Several families of Swampy Cree, Plains Cree, and Wood Cree had even decided to settle at the Mission (Rev. James Nisbet to “Your Honour”, letter, 1873, 1.11 SAB). Although there doesn’t seem to be any specific information which assigns a particular burial style to one more of these groups, there is a significant amount of literature which refers to Cree mortuary practices in general. Practices varied from aerial sepulture (platform burial) to primary mound interments. Millar (1978) notes that aerial sepulture was the most common practice of burial on the Northern Plains. Each form of burial was accompanied by specific ritual and belief. Rev. Nisbet provides a contemporary description of the treatment of the dead by a local Indigenous group:

So we went to the morning service, the old conjurer came – for the first time – and another old Indian who had been with us before and also some Indian youths who had not before been at our meetings. At the close of the service the two old men begged us to take away the body to our place at once – for they could not live and see it before them. Indians universally seem terribly afraid to look upon or touch a dead body – almost as soon as the breath is out, a hole is dug perhaps in the middle of the tent ground and the body placed there without much regard to position – then they immediately move off to another place. This of course does not apply to Christian Indians. [Rev. James Nisbet to Rev. Henry Nisbet, letter, 17 January 1867, Nisbet Family Fonds, Glenbow Archives, Archives Society of Alberta 2009]

This form of burial seems quite stark in contrast to other accounts where the placement, preparation, and treatment of the body are part of an intricate ceremonial procedure. However, if Nisbet’s description accurately describes the mortuary behaviour of the Aboriginal groups surrounding Prince Albert at the time, it becomes very clear that the Forest Centre cemetery in no way represented a traditional First Nations burial. Note

that the date of the letter is several years after the smallpox epidemic of 1870. Fear of the dead may be related to the contagious effects of the smallpox virus.

### ***3.5.3 Grave Inclusions and Body Treatment***

Cree burials frequently contain material grave goods. These are usually placed with the body in an intentional and ceremonial manner, although as depicted in the previous account, they may be unintentional in nature as well. Mandelbaum (2001) notes that pipes, tobacco, and grease were often included although all privately owned possessions of the individual may be interred with the body as well. Goods were included to help the deceased with their journey in the afterlife (Miller 1978, Yarrow 1880).

Treatment and placement of the body was also an important part of Cree interment. These were often dependant on the method of burial. Often, bones were treated with ochre prior to burial. The reason for this behaviour is not clear. Remains were often arranged in a north – south alignment, with the head directed north (Wade Dargin, personal communication; Mandelbaum 2001). The braids of a male may be ritually removed in reference to counting coup (Mandelbaum 2001). The skeletal remains of an individual who had been subject to an aerial sepulture primary burial were often secondarily interred within the ground in a bundled or neatly arranged fashion. In primary interments, the body was often folded into a flexed position. “The legs were bound together with the knees slightly flexed...The hands were folded over the chest, palms down” (Mandelbaum 2001: 151). Individuals were also occasionally interred in a prone position (Yarrow 1880).

Other than clothing artifacts and container materials, the majority of burials at the Forest Centre cemetery did not contain any intentional grave inclusions. The individual from Grave 25 was covered in a Hudson's Bay Company blanket and wore a ring and pendant. Several other individuals were swaddled in purple cloth. The colour purple was associated with royalty and mourning within the Presbyterian Church and was often used in burials (Rev. Sandy Scott, personal communication; WHS 2005). The lack of grave inclusions also contrasts with the Catholic St. Vital and Fort Qu'Appelle Church of England cemeteries where miraculous medals, beads, mirrors, pipes, and a rosary among other artifacts were recovered (Hopkins 2004; Walker 1986). It should be noted that the cemeteries for other early churches in the area, such as St. Augustine's and St. Mary's Anglican Church have been identified and their locations known.

Every individual was buried in an extended supine position. When determined, the individual's hands were placed over the pelvis or the stomach. Grave 25 was an exception to these characteristics due to a distinct kyphosis of the spine which will be discussed in further detail in Chapter Five. Grave orientation varied significantly. All graves in Cluster A were directed in a northwest to southeast alignment, with the head placed at the northwest end of the coffin. Clusters B and C varied, although the majority were oriented in a southwest to northeast manner. (Refer to beginning of Section 4.1) There was no evidence of special body treatment or preparation on the skeletal remains. However, it was clear that several of the individuals had been dressed in fine garments.

#### ***3.5.4 Number of Burials***

Traditional First Nations mass burials are rare on the Northern Plains. There are three in Saskatchewan – the Stoney Lake Cemetery (FINr-6), Glen Ewen Burial Mound

(DgMI-1), and the Gray Site (EcNx-1). Due to a non-sedentary lifestyle, most traditional interments only contain one or several individuals. Furthermore, only the Stoney Lake Cemetery has been affiliated with the Cree. There is little information regarding this group of burials however it appears that the cemetery had been in use for an extended period of time. Many of the graves are mounded and several are mounded with stones (Stoney Lake Cemetery Saskatchewan Archaeological Resource Record Update, Saskatchewan Heritage Resources Branch, Regina 2005). As the burials are intact, further details remain unclear. However, it is possible that both traditional and Christian influenced or Christian burials are present at this site. Historic First Nations cemeteries influenced by Christianity and often affiliated with missions or forts are a fairly common occurrence in Saskatchewan.

### **3.5 Summary**

The presence of distinct clusters within the cemetery suggests that there was a chronology of burial events. Based on the arrangement of grave alone, it is possible that Cluster C predates the other two clusters. Unfortunately, the cultural and mortuary artifacts could not shed more light on this matter. However, the presence of calico buttons within Grave Thirteen places the cemetery within the proposed timeframe of 1866 – mid 1880s. Custom built coffins suggest a personal connection to the deceased and it is possible that Rev. Nisbet may have been the carpenter of one or more of the coffins found at the Forest Centre, although without concrete evidence it is impossible to know for sure.

The style and presentation of cemetery and its interments demonstrates that the Forest Centre cemetery was not a traditional First Nations burial ground. The location,



burial style and presence of purple cloth suggest that it was affiliated with the early Presbyterian Church in Prince Albert. Although the next chapter confirms that First Nations and / or Métis individuals were buried at the Forest Centre cemetery, the deceased would have in all likelihood been baptized or “converted” Christians, as this would have been consecrated ground.

## **CHAPTER FOUR**

### **Methodology**

#### **4.1 Field Methodology**

##### ***4.1.1 Ground Penetrating Radar Survey***

Prior to mitigation, Western Heritage Services Inc. conducted a Ground Penetrating Radar (GPR) survey of the site area in an attempt to accurately identify all of the existing graveshafts, associated anomalies, and to locate any subsurface utilities (i.e. water mains) that may have affected excavation (WHS 2005). A Noggin Plus with a Smart Cart and Data Video Logger was used to collect the GPR data over the 20 x 30 meter area and was set to a maximum depth of 2.5 m (WHS 2005). Using a marked grid system and the soil stains identified and pinned by Golder Associates as a guide, the cart was pushed in a north-facing direction and data were collected at 0.5 m intervals (WHS 2005). This distance was measured using an odometer affixed to the GPR instrument. Unfortunately, the results of the amplitude survey did not accurately reflect the actual results of the excavation. The graves were not in direct association with areas of high amplitude, however, some of the graves were found in close approximation. This may have been due to the existence of a substantial amount of metal hardware associated with these coffins (WHS 2005). However, the transect profiles were far more accurate which identified the grave shaft rather than the burial itself. The less dense mixed or homogenous soil of the grave shaft, resulting from backfilling the grave, contrasts with

that of the more dense natural stratigraphy surrounding the feature thus allowing for GPR identification. This study was 75% accurate as compared to that of the amplitude assessment which was only 33% accurate. Anomalies which affected the GPR study included construction materials such as brick and wood from previous buildings which were located on the site, bioturbation, current construction debris, and clay lenses of natural stratigraphy. (For a more detailed account of the GPR survey, please refer to the site report published by Western Heritage Services Inc., 2005.)

#### ***4.1.2 Documentation***

Video and digital photography were used to document the three major stages of grave excavation, in addition to significant material and osteological features that could be documented *in situ*. The three documentary stages were delineated as:

1. Pre-excavation. Confirmation of the existence of a grave shaft via the presence of a well-defined, rectangular soil stain.
2. Base of the grave shaft, which may include the top of the coffin and coffin hardware.
3. Base of the coffin, which may include the skeletal remains and material goods.

(WHS 2005)

During excavation, planview, grave description, artifact, photo, and skeletal catalogue forms and artifact cards (refer to Appendix B) were completed in order to keep an accurate record of events and artifacts. All photographs and video-bytes have been catalogued and placed on R-DVD and R-CD for further use.

#### ***4.1.3 Excavation Methodology***

All excavation activity took place inside tents in order to minimize disturbance by the public. Privacy allowed the removal of the remains to be conducted in a more respectful manner. The tents also provided shelter for the archaeologists from the elements and allowed the excavation to continue without interruption. The site was also enclosed by an 2.43 m chain link fence, which was locked at the end of the day to protect the site from potential harm and also to deter curious invaders from entering a potentially dangerous construction zone. During all excavation and laboratory activities, latex gloves were worn to minimize contamination and health-associated risks.

The graves were excavated in teams of two, allowing individuals with varying degrees of CRM experience to be paired together. It also permitted those with osteological experience to be paired with individuals who had little or no experience working with human remains. By working in pairs, the excavation could be performed in a well-organized and time-efficient manner.

Excavation was conducted on a grave-by-grave basis rather than excavating the area as a block. The graves were located by the presence of a well-defined mottled soil stain resulting from the admixture of the graveshaft soils subsequent to back filling. The topsoil had already been stripped in preparation for parking lot construction. As a result, the stains were apparent with little or no shovel shaving required. Topsoil removal also exposed some of the coffins that were buried nearer the surface. In some cases, decay of the coffin wood left linear stains which clearly outlined the shape of the burial before any skeletal or material remains were uncovered. Eight anomalies associated with high amplitude reflections from the GPR survey were also investigated, however none of these produced any coffin or skeletal remains.

Upon identification, each grave was marked by a golf tee tagged with a plastic bag which contained a card inscribed with the grave number. Prior to excavation, the appropriate planviews and grave description records were collected and filled out. Video and photography documented the soil demarcation. This was performed at the beginning of each archaeological layer and as needed throughout the exhumation.

Excavation procedure was based on Alexandra D. Bybee's 2002 report entitled "Bioanthropological Investigations of the Reynold's Cemetery (46Ka349) in Kanawha County, West Virginia". As outlined in her report, each burial was subdivided into three layers.

#### *4.1.3.1 Layer One*

Layer One was defined as the area between the soil surface and the top of the coffin lid (Bybee 2002; WHS 2005). The bottom of this layer was demarcated by the presence of coffin hardware or the exposure of the top sides of the coffin (Bybee 2002; WHS 2005). The top of the coffin sidewalls were often encountered first, as the lids had collapsed due to overburden pressure. Layer One was excavated using a shovel. The soil from this level was not screened due to its disturbed nature. In several instances, Layer One had been removed during the topsoil removal process.

#### *4.1.3.2 Layer Two*

The second layer extended from the top of the coffin lid to the skeletal remains (Bybee 2002; WHS 2005). Quite often, Layer Two primarily consisted of the lid, due to its inward collapse. This layer was primarily excavated using a trowel and brush. The soil from this level was screened using a 0.64 cm mesh hardware cloth (WHS 2005).

#### 4.1.3.3 Layer Three

Layer Three consisted of the skeletal remains to the base of the coffin (Bybee 2002; WHS 2005). Excavation often extended past the floor of the coffin to ensure that a stacked burial was not overlooked. This layer was excavated using a brush and wooden chopstick (procured from a local eating establishment). The soil from this level was screened using a 2 mm mesh (WHS 2005) due to the very small nature of infant and child skeletal elements. Based on Bybee's (2002) methodology, Layer Three was subdivided into five zones (Figure 18). Skeletal elements and cultural material were excavated and bagged according to zone.

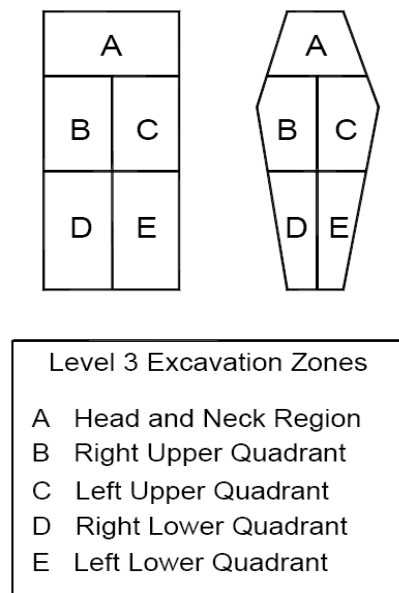


Figure 24. Bybee's zones of excavation (Bybee 2002:35)

#### 4.1.3.4 Removal of Human Remains

Recovered skeletal material was placed in brown paper bags to prevent further decomposition due to moisture. Larger, more fragile elements were wrapped in tin foil

to provide structural support (WHS 2005). These segments were often removed as blocks containing the surrounding soil, which also reinforced the delicate remains.

Due to the significant or overall fragile nature of the remains, several interments were removed whole or in large blocks for more accurate removal and documentation in the laboratory. This group effort was accomplished in several steps. First, the whole coffin was in a sense, placed on a pedestal. All sides of the coffin (except the base) were exposed. Next, the sides of the coffin were bound in cardboard to facilitate reinforcement of the block. A series of shovels were slid underneath the coffin, while several excavators trowelled around the periphery, freeing the large segment. During the removal of Grave 25, this step was performed several times, on alternating sides of the coffin. The block was then slid onto a cardboard or plywood platter. The package was then wrapped in tinfoil, plastic, or a tarp to protect it from further damage.

## **4.2 General Laboratory Methodology**

Upon completion of excavations at the Forest Centre Cemetery, all remains were transported to Saskatoon, Saskatchewan where they could be cleaned and thoroughly examined. This was conducted in two phases due to lab space accessibility at the time. Cleaning and initial cataloguing were performed at Western Heritage Services Inc. Primary cataloguing and osteological analysis were conducted at the Department of Archaeology, University of Saskatchewan.

### ***4.2.1 Cleaning Methods***

To facilitate a more accurate observation of the remains, the soil adhering to the bones was removed via light brushing using a toothbrush and water. Once the bones

were cleaned, the damp skeletal material was left to dry on trays lined with paper towel. Individuals were stored on separate trays affixed with the appropriate artifact cards to avoid mingling of remains. Several graves were removed from the site within blocks of soil in order to maintain body arrangement and / or avoid loss of skeletal material. The soil surrounding the remains of these individuals was removed using a combination of soft brush, wooden pick, and trowel. The soil was then water-screened using a 1mm mesh. Each individual was cleaned with a new toothbrush and change of water to aid in avoiding contamination.

#### ***4.2.2 Initial Cataloguing***

Subsequent to the cleaning and drying process, the remains were roughly catalogued in order to provide an approximation for the number of fragmentary remains and elements present within the collection, in addition to providing a means of organizing the skeletal material for further analysis. This initial inspection determined whether an element was present and in how many fragments. By accounting for the number of sided elements present within each burial, the numbers of individuals represented may be confirmed. This catalogue was also used as an inventory checklist when transporting the individuals to the second lab location.

#### ***4.2.3 Primary Cataloguing***

Primary cataloguing occurred concurrently with initial age analysis. A second series of cataloguing was required in order to nullify any inaccuracies that were present. Additionally, this process allowed for a more in-depth and precise description of the remains to be completed. The conjoining of fragmentary elements aided in creating a



more comprehensive reconstruction of the skeletal remains. In several instances, this method imparted details regarding aging and development that would not have been identifiable from individual fragments. Several inconspicuous developmental and pathological features were identified during this thorough investigation.

#### ***4.2.4 Recording***

In order to organize and collect the necessary data, several purpose-specific worksheets were constructed for each individual. This ensured that the same data were taken for each individual and minimized accidental omissions. The use of prepared worksheets also saved time and was more efficient. A worksheet was created for each of the following research aspects: Cataloguing, Epiphyseal Appearance / Age Determination, Metric Analysis / Age Determination, Mandibular and Iliac Morphology / Sex Determination, Non-Metric Skeletal Traits, Cranial Metric Assessment, Postcranial Metric Assessment, and Non-Metric Cranial Assessment. A dental chart was also used where applicable. See Appendix B for a copy of each of these forms.

#### ***4.2.5 Sampling Techniques***

Bone samples were removed from each individual in order to provide the skeletal material required for trace element analysis and bacterial DNA testing. Samples required for trace element analysis were removed from the midshaft of both the right femur and humerus. The left elements were used when necessary. Hair and fingernail samples were also collected when applicable. Photographs of each sampled element were taken prior to bone matrix removal. Several vertebrae, teeth, and diaphyseal segments were collected for use for the DNA analysis. A viral DNA study (of smallpox)

was also planned and samples were removed for that purpose as well; however, historic documentary evidence negated the necessity of conducting the proposed research.

#### ***4.2.6 Photography and Radiology***

Photographs of several individuals were taken to provide documentation for thesis publication. Photography was conducted by the Medical Photography Unit at the Royal University Hospital.

Radiology was conducted in order to identify any pathological changes within the bone. Radiological services were provided by the Department of Medical Imaging at the Royal University Hospital.

Dental radiographs were taken to provide information on tooth eruption and pathological features present within several individuals. Dental radiology was conducted by the College of Dentistry at the University of Saskatchewan, Saskatoon, Saskatchewan.

### **4.3 Analysis Methodology**

The primary focus of this research was to identify the age, sex, and racial affiliation of each individual buried at the Forest Centre Presbyterian cemetery. Furthermore, it was considered imperative to identify any pathological or developmental abnormalities which may provide testament to the health and environment of this population. Due to general morphological differences based on a ratio of osteo-developmental completeness, infants, children, and adults require separate methods of analysis. Consequentially, several methods of skeletal analysis were required. In most

cases, it was possible to conduct more than one form of an examination for age, sex, and race, increasing the accuracy of the end results.

#### ***4.3.1 Subadult Non-Metric Analysis***

##### *4.3.1.1 Epiphyseal Appearance and Fusion*

Used to determine the age of the individual, epiphyseal analysis examines the appearance and fusion of primary and secondary centers of ossification within the skull and long bones. For this purpose, the fusion of complete cranial bones and eruption of the dentition were also included within this category. These processes occur at a known relative rate; therefore, the age of the Forest Centre individuals may be established based on the stage of ossification or dental development attained at the time of death.

##### *4.3.1.2 Mandible and Ilium Morphology*

Several mandibular and iliac features possess distinct traits indicative of the sex of the individual. The analysis of these skeletal elements was based on the works by Loth and Henneberg (2001) and Schutkowski (1993). Mandibular assessment focused on five sexually dimorphic traits: symphyseal base, median sagittal line, gonial eversion, mental protrusion, and the corpus shape. For example, the corpus shape of the male mandible is generally angular and abrupt, whereas the female corpus is typically curved and gradual in appearance (Loth and Henneberg 2001). Four traits were scrutinized during the iliac morphological assessment: the greater sciatic notch angle, greater sciatic notch depth, the “*Arch*” criterion (Schutkowski 1993), and the iliac crest curvature. For example, the angle of the greater sciatic notch is greater than 90 degrees in female individuals and less than or equivalent to 90 degrees in male individuals (Schutkowski

1993). (For detailed definitions of these traits, please refer to the journal articles by Loth and Henneberg [2001] *Sexually Dimorphic Mandibular Morphology in the First Few Years of Life* and Schutkowski [1993] *Sex Determination of Infant and Juvenile Skeletons: I. Morphognostic Features*.) For both of the above methods, each trait was assessed and designated as female, male or undecided. A successful outcome was attained if a minimum 7 out of 9 (approximately 80%) registered as positive for one sex.

Presently, there are very few consistent osteological methods developed to determine the sex of subadult individuals. Skeletal sexual dimorphism in juveniles is slight at best. In a vast majority of young individuals, the iliac and mandibular features displayed a blending of female and male traits. Consequentially, of the Forest Centre subadults examined for sexual dimorphism, only two individuals from this sample exhibited any convincing results.

#### *4.3.1.3 Racial Affiliation*

Undifferentiated skeletal morphology of subadult individuals also prevents a detailed racial analysis of osteological remains. However, the presence of shovel-shaped maxillary incisors is a positive Asian or Aboriginal racial ancestral indicator. Incisor shovelling was present on 12 of the 21 individuals. Note that four individuals could not be assessed due either to the lack of maxillary incisors for the individual or indistinct shovelling. The remaining five individuals displayed spatulate incisors, a European ancestral trait. This form of analysis was performed on both adults and subadults, as shovel shaping can be identified even on tooth buds.

### ***4.3.2 Adult Non-Metric Analysis***

#### *4.3.2.1 Non-Metric Skeletal Traits*

There are numerous osteological variations contrary to normal anatomy that may be present in adults. Some of these traits may be apparent in juveniles, but are generally considered to be ambiguous due to incomplete development. Seventy cranial and post-cranial traits were investigated, including the presence or absence of a metopic suture, trochlear spur, and sternal foramen. It should be noted that these traits are not pathological in nature; they are merely a variation of normal skeletal anatomy. Some of these characteristics are considered more prominent within different racial populations and male or female populations.

#### *4.3.2.2 General Innominate Morphology*

In adults, the pelvis is a highly sexually dimorphic feature. Ten traits were considered during this stage of analysis: the shape of the ilium, the breadth of the greater sciatic notch, the presence of a preauricular sulcus, the subpubic angle, the shape of the pubic element, the presence of scars of parturition, the shape of the subpubic ramus, beveling of the subpubic ramus, the height of the auricular area and the shape of the obturator foramen. The findings were concrete: two male and two female adults were present within this population. Detailed results of this analysis will be discussed during the description of each adult individual.

#### *4.3.2.3 Pubic Symphyseal Surface, Auricular Surface, and Rib End*

##### *Morphology*

The appearance of the pubic symphyseal surface, the auricular surface of the ilium, and the sternal rib ends change and develop throughout the aging process. These changes in morphology occur at a known rate; thus imparting relative age values for the Forest Centre individuals. Porosity, marginal and surface texture and presence of exostoses were among the traits considered during this examination. Ages of the adults ranged from the early twenties to early sixties.

#### *4.3.2.4 Cranial Morphology*

There are various cranial features which demonstrate sexual dimorphism and indicate racial affiliation. In addition to assessing the general appearance of the skull, the determination of sex is primarily based on the degree of robusticity exhibited on specific locations of muscle attachment. The features examined include the mastoid process, nuchal crest, supraorbital margins, glabellar prominence, nuchal crest, and the breadth and depth of the palate. Generally, male individuals tend to exhibit a greater degree of robusticity than females, where these bony features tend to be less pronounced and less robust in nature.

Cranial morphology is also a key factor in determining racial affiliation. As with sex determination, specific bony features are scrutinized in addition to assessing the overall appearance of the cranium. Characteristics such as the orbit and palate shape, facial prognathism, the presence or absence of shovel-shaped incisors, and the appearance of the nasal aperture are assessed based on the typical phenotypes expressed in white, black, and Asian populations. Aboriginal groups are also considered during this

assessment, although a defined anthroposcopic model has not yet been established for these groups which often express a blending of traits. Clearly, not every individual is able to be definitely placed in one of these ancestral categories. Morphogenetic overlaps exist due to the interbreeding between racial groups (Byers 2005). This was an important consideration during the evaluation of the Forest Centre population as Métis and Country Born peoples made up a vast majority of the demographic of the Prince Albert area during the latter half of the nineteenth century.

Unfortunately, due to post-mortem degradation, these traits could only be viewed accurately on two of the individuals. One of the assessed individuals was subject to post-mortem overburden compression, thus the results may have been skewed.

#### ***4.3.3 Sub-Adult and Adult Metric Analysis***

##### ***4.3.3.1 Osteometrics of the Postcranial Skeleton***

The maximum diaphyseal length of the clavicle, humerus, ulna, radius, femur, tibia and fibula and the maximum height of the scapula was measured for both the right and left sides of all applicable subadult individuals. These measurements were also taken on the adult individuals (where applicable) in addition to midshaft diameter and site-specific measurements (i.e. glenoid fossa height of the scapula). The first metacarpal and the innominate were also measured.

The age of applicable subadult individuals was determined via the comparison of these measurements to the known diaphyseal growth rate, as adapted by Scheuer and Black (2000). Incomplete long bones and scapulae were not included in this analysis. Postcranial measurements may be utilized in adults in order to estimate stature. Severely

disproportionate measurements may be indicative of the presence of a pathological process.

#### *4.3.3.2 Cranial Metric Analysis*

This metric examination was performed on the adult individuals only, due to the incomplete development and fusion of the subadult crania. A variety of measurements were taken, each based on the distance or angle between two cranial landmarks. Using discriminant function analysis, the measurement values were incorporated into a formula based on race and sex criteria. The score achieved was then compared to a set sectioning point, determining the quality in question (i.e. male or female, white or Asian). This assessment was only conducted on individuals whose crania could provide accurate measurements needed for discriminant function analysis.



## **CHAPTER FIVE**

### **Osteological Burial Descriptions**

The focus of this chapter is to present the results of the osteological analyses for each individual interred at the Forest Centre cemetery. Each entry will identify the determined age range, racial affiliation, and sex of the individual where applicable. In addition, a description of the catalogued remains will be briefly examined. Evidence of pathological or anomalous changes to the skeletal or odontological material will also be presented where applicable. The purpose-specific worksheets for each individual may be found in Appendix B. A table summarizing the results of the skeletal analysis is included in Appendix A in Table 5-1. Table 5-2 within Appendix A presents a summary of the juvenile metric analysis data. Table 5-3 Appendix A presents a summary of the adult cranial metric data while Table 5-4 presents the post-cranial metric data recorded. Table 5-5 Appendix A summarizes the discrete traits recorded for the adult individuals. Note that grave number and individual number are equivalent.

Determining the sex of infants and young children based on skeletal remains is a controversial practice. Generally, the gross methods used for assessment are considered to be unreliable and often inaccurate. However, an attempt was made to identify the sex of every individual where the preservation of remains allowed assessment. This was not only performed for the sake of completeness, but was completed in case the burial

records were ever located and identification of the Forest Centre individuals was possible. Metric values based on the maximum diaphyseal length of infants and children are also often considered inaccurate. As such, this method of age assessment was included as a sounding board to check the data produced from the non-metric and odontological evaluations. By including several different methods of investigation, inaccuracies and incongruous results may be checked producing a more accurate outcome.

## **5.0 Graves One and Three to Six**

No skeletal material was recovered from any of these grave sites.

### **5.1 Grave Eight**



Figure 25. Individual from Grave Eight in situ (Courtesy Western Heritage Services Inc.)

### ***5.1.1 Skeletal Description***

Fragmented remains from the cranial and post-cranial elements of Individual Eight were recovered (Figure 26). Cranial fragments consisted primarily of those from the superior aspect of the skull. The diaphyses of the appendicular skeleton were observed to be relatively intact and non-fragmented in nature. Approximately 96 fragments were recovered from this individual.

### ***5.1.2 Determined Age Range***

Both non-metric and metric forms of osteoanalysis were used to determine the approximate age range for this individual. Although the maxillary dentition was far from complete, it was still possible to assess the age of the individual by examining the stage of tooth development from the teeth that were present.

#### ***5.1.2.1 Non-Metric Analysis - Epiphyseal Appearance / Fusion***

The occipital bone was represented by the *pars squama* or squamous portion of the skeletal element. It was clear that the interparietal and supra-occipital parts of the squamous portion had fused. This fusion occurs during the fifth fetal month of life (Scheuer and Black 2000). In addition, the superior median fissure and mendosal suture were still evident. The fusion of these landmarks occurs during the first postnatal year of development (Scheuer and Black 2000). The morphology, size, and degree of development of the present portions of the occipital bone suggest that the individual may have been between 5 fetal months of age and birth. If the bone had been more complete, a more definitive age range may have been produced.

The temporal bone was represented by the petromastoid portion only. It was unclear if it had fused with the squamous portion of the bone. However, comparative specimens (Figure 5.33 Scheuer and Black 2000) indicate the temporal represented a level of development consistent with an age of birth to 6 months postnatal.

The complete right and left halves of the frontal bone were recovered from Individual Eight indicating the metopic suture was still patent. The feathered nature of the medial margins of each half suggests the anterior fontanelle was still patent. The degree of skeletal development indicates a perinatal age range.

Each parietal bone had developed into a single fused unit. The size and morphology of these elements suggest a perinatal age range.

The maxillae of this individual presented complete deciduous tooth crypts which housed the unerupted developing crowns of the first left and right incisors. This element will be considered in the odontology section.

Both zygoma exhibited a notched inferior border which suggests that the individual was perinatal to post-natal in age at the time of death (Scheuer and Black 2000).

The appearance of the nasal bones suggested the individual was between birth and two to three years of age. Each bone demonstrated an adult morphology with the vascular foramen in the inferior half of the bone. This physical expression is consistent with an individual of the proposed age as per Scheuer and Black (2000).

The ilial, ischial, and pubic elements comprising the innominate were identifiable in isolation, indicating the individual attained a level of development generally exhibited at birth. In addition, the ilial acetabular surface presented a marked eminence on the anterior surface which signifies the early development of the iliopectineal line (Scheuer

and Black 2000). This feature is not evident until six months of age postpartum (Scheuer and Black 2000).

The right scapula was represented by the body of the element. The acromial process, coracoid, medial border, inferior angle, and glenoid mass were not recovered. This may indicate that these centers of growth had not yet ossified and remained cartilaginous. As such, this would suggest that Individual Eight had died at or near birth. However, it is possible that these minute elements may not have preserved or been recovered.

The humeri, radii, ulnae, femora, and tibiae consisted of diaphyseal elements only. It is possible that the secondary centers of ossification that appear within a year of postnatal development may have decomposed or been overlooked during excavation. However, proximal and distal epiphyses were recovered from other individuals. Therefore, it is plausible to assume that these elements had not yet ossified and did not survive the decomposition process. At birth, the humeral, radial, and ulnar diaphyses are the only portion of the bone to have fully ossified (Scheuer and Black 2000; Schwartz 1995). At this time, the femur is represented by the distal epiphysis and the diaphysis whereas the tibia exhibits both the proximal epiphysis and the diaphysis (Scheuer and Black 2000; Schwartz 1995). As neither of these epiphyses was found, these elements suggest a developmental age of late term fetus to neonate.

#### *5.1.2.2 Metric Analysis – Maximum Diaphyseal Length*

The maximum diaphyseal length of the humeri, ulnae, radii, and femora were measured. The distal width of each humerus was also measured as many of the suggested age ranges fell into a prenatal scope. The diaphyseal widths of the femora are

not available. See Table 5-2 Appendix A for a complete data summary of the measurements taken. The humeral maximum diaphyseal length measurements for this individual were placed in a linear regression equation defined by Scheuer and Black (2000; Scheuer et al. 1980):

$$\text{Age (in weeks)} = (.4585 * \text{humerus}) + 8.6563 \pm 2.33 \quad (5.1)$$

In this equation, *humerus* is equal to the maximum diaphyseal length of the humerus measured in millimeters. Note that this equation is only accurate when used on remains from individuals who are between twenty-four fetal weeks and six weeks postnatal as the calculation was based on radiographs from infants of that age (Scheuer and Black 2000). The equation calculating the age for Individual Eight may be expressed as follows:

$$(.4585 * 63.0) + 8.6563 = 37.5 \pm 2.33 \text{ weeks} \quad (5.2)$$

The age range calculated by this formula (35.17 – 39.83 fetal weeks) is also within the perimeters published in table form by Scheuer and Black (2000)<sup>2</sup>. The correlated maximum mediolateral distal width of the humerus (16.0 mm) falls within this age range.

Further linear regression equations were required due to the young age of the individual in question. The equations for the ulna, radius, and femur were also based on radiographs taken from individuals who were twenty-four fetal weeks to six weeks

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<sup>2</sup> Adapted from the work of Fazekas and Kósa (1978).

postnatal (Scheuer and Black 2000). As with the humerus, each of the results were compared to data compiled by Scheuer and Black (2000) based on results from Fazekas and Kósa (1978) . The linear regression equation for calculating age based on maximum ulnar diaphyseal length (Scheuer and Black 2000) is as follows:

$$\text{Age (in weeks)} = (.5072 \times \text{ulna}) + 7.8208 \pm 2.20 \quad (5.3)$$

In this equation, *ulna* is equal to the maximum diaphyseal length of the ulna measured in millimeters. Both the right and left ulna were recovered from Individual Eight so the equation was reproduced for both sides and a mean result was calculated. The left ulna produced a value of 33.52 – 37.92 fetal weeks and the right ulna produced a value of 34.53-38.93 fetal weeks. The average of both sides suggests the individual was between 34.01 and 38.43 fetal weeks at time of death.

Scheuer and Black's (2000) linear regression equation for calculating age based on the maximum diaphyseal length of the radius is as follows:

$$\text{Age (in weeks)} = (.5850 \times \text{radius}) + 7.7100 \pm 2.29 \quad (5.4)$$

In this equation, *radius* is equal to the maximum diaphyseal length of the radius measured in millimeters. When calculated according to the above equation, the left radius produced a value of 33.50 - 38.08 fetal weeks and the right radius produced a value of 34.09 -38.67 fetal weeks. Based on this information, the mean calculated age range for this individual was 33.78 -38.38 fetal weeks.

The linear regression equation for estimating the age range based on maximum diaphyseal length of the femur (Scheuer and Black 2000) is as follows:

$$\text{Age (in weeks)} = (.3303 \times \text{femur}) + 13.5583 \pm 2.08 \quad (5.5)$$

In this equation, *femur* is equal to the maximum diaphyseal length of the femur measured in millimeters. When calculated according to the above equation, the left femur produced a value of 34.93-39.09 fetal weeks and the right femur produced a value of 34.60-38.76 fetal weeks. Based on these calculations, the mean calculated age range for this individual was 34.77-38.93 fetal weeks.

#### *5.1.2.3 Odontological Age Range*

The developing crowns of the left and right first deciduous maxillary incisors were recovered during the exhumation of Individual Eight. During development, the central maxillary incisors are the first teeth to mineralize and are, on average, the second to erupt (Scheuer and Black 2000; Schwartz 1995). The emergence of these teeth generally occurs during tenth postnatal month (Scheuer and Black 2000; Schwartz 1995). Scheuer and Black (2000) describe the perinatal central incisor as three-lobed structure which consists of a crown that is 60 – 80% complete. The recovered crowns were consistent with the described morphology.

#### *5.1.2.4 Individual Eight Age Summary*

The epiphyseal appearance investigation of the skeletal remains clearly indicated that Individual Eight was at or near birth (perinatal) at time of death. This information



was confirmed by the metric analysis which revealed that the individual was approximately 34.4 – 38.9 fetal weeks in age. The odontological assessment also concurred with this age estimation as the central incisors were consistent in morphology and level of development with those of an individual at birth. Based on this information, the approximated age range for Individual Eight is 38 fetal weeks to birth.

### ***5.1.3 Racial Affiliation***

The incisors were also used to determine the racial affiliation of the individual. The lingual aspect of these teeth were spatulate in nature, suggesting Individual Eight was of European ancestry.

### ***5.1.4 Sex Determination***

Individual Eight could not be assessed with any degree of accuracy and as such the sex of this individual remains undetermined.

### ***5.1.5 Individual Eight Osteological Summary***

The results of the metric and non-metric skeletal assessment suggest that Individual Eight was a caucasian neonate approximately 38 fetal weeks to birth in age. Sex and racial affiliation could not be determined. No discernable evidence of trauma or pathological change was observed.

## **5.2 Grave Nine**

### ***5.2.1 Skeletal Description***

A total of nine bone fragments was recovered from Individual Nine. Two fragments from the left petromastoid were disinterred in addition to two unidentifiable deciduous tooth fragments. Five unidentifiable skeletal fragments were also recovered.

### ***5.2.2 Determined Age Range***

The petrous morphology indicated a minimum age of late term fetus, approximately eight fetal months to birth. Unfortunately, the lack of identifiable remains prevented a comprehensive analysis for this individual.

### ***5.2.3 Racial Affiliation***

No skeletal or odontological remains were recovered which could provide information on the racial affiliation of the individual.

### ***5.2.4 Sex Determination***

No skeletal elements were recovered which could provide information on the sex of the individual.

### ***5.2.5 Individual Nine Osteological Summary***

Little information could be obtained regarding this individual due to the lack of remains recovered upon excavation. The petromastoid portion of the temporal bone indicated that the individual was a minimum of eight fetal months at time of death. The

sex and racial affiliation of Individual Nine remain undetermined. No evidence of trauma or pathological change was observed.

### 5.3 Grave Ten



Figure 26. Individual from Grave Ten, facing southwest

#### 5.3.1 Skeletal Description

Grave Ten (Figure 27) produced approximately 541 skeletal fragments. Despite being highly fragmented, the bone exhibited little evidence of significant postmortem taphonomic change or decay. The individual presented a complete deciduous dentition and many of the developing epiphyses remained intact. These elements were important in establishing an approximated age for the individual at time of death. Some of the fragments were able to be conjoined and as a result, would reveal an interesting developmental anomaly. This variance will be discussed in a later section.

### ***5.3.2 Determined Age Range***

Osteometric and non-osteometric forms of investigation were applied to determine the age of Individual Ten. Unfortunately, discrepancies between these two types of data produced an unusually broad age range. This incongruity will be discussed further on in this section.

#### ***5.3.2.1 Non-Metric Analysis - Epiphyseal Appearance / Fusion***

All four components of the occipital bone were represented. However, it appeared that the partes lateralis (exoccipitals) had fused with the squamous portion of the bone. This fusion occurs between the first and third years of life (Scheuer and Black 2000). The lateral margins of the basioccipital component and the medial margins of the exoccipitals indicated that these elements were still discrete entities of ossification. The fusion of these parts does not occur until the ages five to seven years (Scheuer and Black 2000). Anteromedially, the exoccipitals demonstrated completed hypoglossal canals. This canal is created by the union of the jugular and condylar limbs which articulate with the lateral aspect of the basioccipital (Scheuer and Black 2000; Schwartz 1995). The hypoglossal canal is completely formed by the second to fourth year (Scheuer and Black 2000).

Fusion of the petromastoid and squamotympanic portions of the temporal bone suggested this individual had completed the first year of growth. The foramen of Huschke had become a discrete attribute formed by the union and growth of the anterior and posterior tympanic tubercles. The formation of this foramen is usually completed during the first year of life (Scheuer and Black 2000). Subsequent to the first year of growth, the tympanic plate continues to develop and the foramen of Huschke is usually

filled in by the fifth year (Schwartz 1995). In some individuals, this foramen may remain patent into adulthood. The mastoid process was small, rounded and in its initial stage of development which commences during the first year and continues until age five (Scheuer and Black 2000).

The metopic suture, which unites the left and right halves of the frontal bone, appeared to have fused. This event normally occurs between years two and four (Scheuer and Black 2000), although the entire suture may remain patent into adulthood. Due to the fragmented nature of the frontal bone, it was uncertain whether the suture had completely or only partially fused.

The parietal bones had attained an adult morphology lacking a distinct parietal eminence. The maxillae had fully formed and the deciduous dentition had erupted. In addition, the zygoma had attained adult proportions and demonstrated a small degree of robusticity. These features suggest that the individual had surpassed infancy and entered early childhood. Scheuer and Black (2000) define this stage of childhood as pertaining to individuals who are nearing or have entered the preschool years ([approximately 3-5 years old]).

Sphenoidal growth and fusion also indicated that Individual Ten had entered early childhood. The greater wings and the body had united, suggesting the individual had attained an age of at least one year. The completion of the foramen spinosum occurs by the second year (Scheuer and Black 2000). This characteristic was observed on the remains. Furthermore, it was evident that the dorsum sellae had ossified. The bony development of this feature is completed by the fifth postnatal year (Scheuer and Black 2000). Unfortunately, the sphenoidal conchae were not observable to provide any

corresponding data which could verify the late date supported by the ossification of the dorsum sellae.

The crista galli and the cribriform plate had fused suggesting the individual was between one and two years old. Due to the incompleteness of the specimen, it was not possible to ascertain if the perpendicular plate of the ethmoid had reached the vomer. This growth is usually completed between early and late childhood (Scheuer and Black 2000).

During the first year, the mandibular symphyseal surface fuses (Scheuer and Black 2000), as exhibited in Individual Ten. The dentition of the mandible will be discussed in the odontology section.

The transverse foramina of the first cervical vertebra (C1) indicated that the individual was at least between the ages of one and two as the conduits were nearing completion. The posterior arch had not yet medially fused. As per Scheuer and Black (2000), this fusion happens during the third and fourth postnatal years. The dens of the second cervical vertebra (C2) had fused, indicating the individual had surpassed the neonatal stage. The apex of the odontoid process was not recovered. No fusion had occurred on the posteromedial aspect of the neural arch or at the neurocentral junction of the third to the seventh cervical vertebrae. The fusion of these elements occurs by the end of the second year (Scheuer and Black 2000).

The lower thoracic vertebrae exhibited posterior fusion, imparting an age of approximately two years. The lumbar vertebrae also displayed evidence of posterior fusion of the neural arches and development of the lumbar transverse processes had commenced. No neurocentral fusion was evident in either the thoracic or lumbar vertebrae. These features also indicate that the individual was roughly two years of age.

The sacrum was still comprised of discrete elements. In contrast to the rest of the developing vertebral column, neurocentral fusion had occurred in each sacral component. This fusion generally occurs between the ages of two and six (Scheuer and Black 2000). The second sacral vertebra (S2) demonstrated fusion of the neural arch, which usually occurs in children ages seven to fifteen (Scheuer and Black 2000). The remaining sacral elements did not reveal any indication that intra-laminar fusion had taken place.

The manubrium and recovered sternebrae were distinct and easily identifiable. Scheuer and Black (2000) indicate that the manubrium may be identified in isolation during the first year and the sternebrae are recognizable between the third and sixth year.

Epiphyses of the os coxae begin to form and subsequently fuse during post-infancy. The remains of Individual Ten exhibited the bilateral development of the ischial spine, pubic tubercle, and pubic crest. These features are usually completed by the end of the first year (Scheuer and Black 2000). The innominate also demonstrated evidence of second year growth; the anterior iliac border was directed towards the anterior aspect of the body in a vertical orientation.

Non-metric evaluation of the clavicle is not accurately applicable to an individual between the ages of eleven fetal weeks and twelve to fourteen years as the bone is represented by the diaphysis only and retains an adult morphology. As such, only the osteometric analysis of this element will be taken into account.

The scapulae of Individual Ten presented coracoid process epiphyses that were identifiable in isolation. This trait is consistent with individuals who are approximately three years of age (Scheuer and Black 2000).

The proximal epiphyses of the humerii were recovered during excavation suggesting that this individual was no less than six months post-partum.

Ossification of the distal radial epiphyses occurs during the first and second years (Scheuer and Black 2000). The left distal epiphysis was recovered and identified during osteological examination.

The ulna was represented by the diaphysis only. This level of osteological maturity is consistent in persons representative of a neonatal age range.

Three carpals were present on the right side. The capitate, hamate, and triquetral commence ossification between the second postnatal month and the second year of growth (Scheuer and Black 2000). Unfortunately, the carpals from Individual Ten were not identifiable in isolation. However, between years three and four the capitate adopts an identifiable morphology (Scheuer and Black 2000). The lunate begins ossification during this time as well (Scheuer and Black 2000). Consequentially, the approximated age range based on carpal development is two months – three years.

The femora were represented by the diaphyses and both the proximal and distal epiphyses in a discrete state. The femoral head secondary center of ossification appears during the first postnatal year (Scheuer and Black 2000, Schwartz 1995). The morphology of the distal epiphysis was consistent with an age of two years. The appearance of the femoral epiphyses suggests the individual was approximately two years of age.

The medial malleoli were absent in this individual. Ossification of these bilateral landmarks occurs between the third and fifth years. In addition, the proximal and distal epiphyses were not recovered and the tibiae were only represented by the diaphyseal



elements. The fibulae were also only represented by the diaphyses. As such, the developmental analysis for these bones remains difficult to accurately assess.

#### *5.3.2.2 Metric Analysis – Maximum Diaphyseal Length*

The maximum diaphyseal lengths were measured for the clavicular, humeral, ulnar, radial, femoral, tibial, and fibular elements. Linear regression equations were not utilized as the individual was clearly well into post-natal development at the time of death. Consequentially, it was possible to compare the measurements directly to Scheuer and Black's (2000) tabular data to acquire an age range. The clavicle length was consistent with an age of approximately 2 to 3 years. The humeral, ulnar, radial, tibial and fibular lengths suggest the individual was between 1 and 1.5 years of age. The femoral diaphyseal lengths propose an age range of 1.5 to 2 years of age.

#### *5.3.2.3 Odontological Age Range*

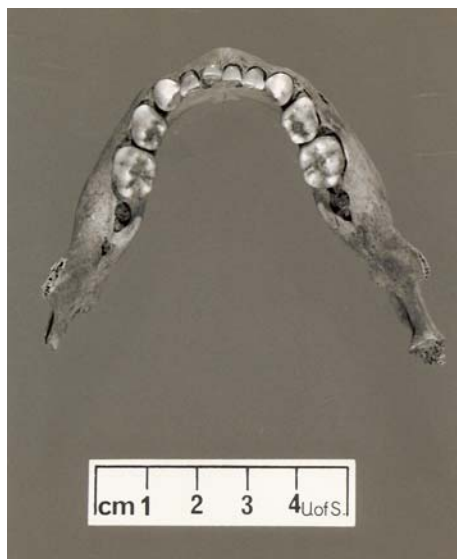


Figure 27. Individual Ten mandible and dentition (occlusal view)

Individual Ten presented a complete deciduous dentition (212 / 212)<sup>3</sup>, with evidence of the permanent dentition emerging from underneath. All deciduous teeth had erupted and had exhibited varying degrees of apical closure. The maxillary and mandibular first permanent molars were beginning to erupt (Figures 28 and 29).

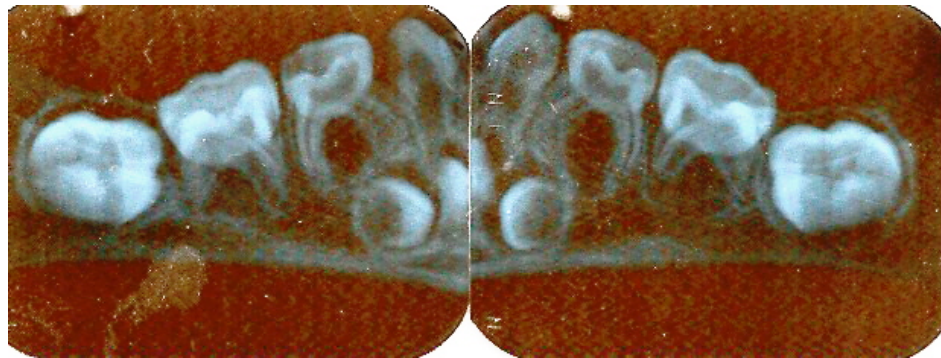


Figure 28. Individual Ten mandibular radiograph

However, without radiographic evidence, it is difficult to fully assess odontological age as other teeth may be developing that are not evident from the exterior of the bone.

Figure 4 illustrates the crowns of the right mandibular permanent fourth premolar [RP<sub>4</sub>] and the left mandibular permanent fourth premolar [LP<sub>4</sub>]. The permanent canines are also shown developing beneath the deciduous canines. Based on odontological formation and eruption patterns, Individual Ten is approximately three years of age +/- 12 months.

#### 5.3.2.4 Individual Ten Age Summary

The epiphyseal appearance and fusion patterns suggest that Individual Ten was approximately 3 years of age which is consistent with the age range of 3 years +/- 12 months produced by the odontological assessment. However, the metric calculations

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<sup>3</sup> The deciduous dentition formula.

suggest that the individual was approximately 1.5 years of age. This discrepancy may be attributed to the presence of lines of arrested growth found on the proximal and distal tibiae and the distal femora. Aufderheide and Rodriguez-Martin (1998) note that the final lengths of long bones are not normally affected by periods of arrested development. However, it is possible that developing infants and children may exhibit some differentiation from normal development rates following periods of growth cessation. This pathological feature will be discussed in more detail within Section 5.3.5. Note that the incongruity between these methods of investigation may also be due to inaccuracies within the metric value data. As such it is probable that Individual Ten was closer to 3 years of age as indicated by the non-metric evaluations.

### ***5.3.3 Racial Affiliation***

Racial affiliation was determined by the presence or absence of shoveling on the lingual aspect of the maxillary incisors (Refer to Section 3.3.1.3). The incisors tested positive for this trait indicating Individual Ten was of Aboriginal ancestry.

### ***5.3.4 Sex Determination***

Sex determination in Individual Ten was based on mandibular and iliac morphology. The mandible presented a smooth median sagittal line, continuous eversion of the gonial region, and a faint, narrow mental protuberance. Each of these traits is consistent with that of a female individual. The symphyseal base was angular in nature (a male trait) and the corpus shape could not be determined. The ilium presented a greater sciatic notch angle that was greater than 90 degrees, a shallow greater sciatic notch depth, and a faint iliac crest curvature. Each of these traits is female in nature. In addition, the “arch” criterion also tested positive in nature. This is determined by

drawing an imaginary line from the anterolateral or vertical aspect of the arch towards the auricular surface (Schutkowski 1993). If the line intersects with the articular surface, the individual is likely female (Schutkowski 1993). If the line remains lateral to the auricular surface, the individual is likely a male (Schutkowski 1993). Individual Ten presented an arch criterion that intersected with the auricular surface.

This individual tested female for 7 out of 9 sexually dimorphic traits suggesting it was very likely Individual Ten was of the female sex.

### ***5.3.5 Pathology and Developmental Variation***

#### ***5.3.5.1 Tripartite Os Inca***



Figure 29. Tripartite Os Inca of Individual Ten

The squamous portion of the occipital bone consisted of a tripartite Os Inca (Figure 30). This variance occurs when the mendosal suture and the sutures between the primary and secondary interparietal portions of the superior *pars squama* remain patent. These centers of ossification are usually fused by the fifth fetal month (Scheuer and Black

2000). During the first postnatal year, the mendosal suture completes its closure bilaterally (Scheuer and Black 2000; Schwartz 1995). This is not a pathological feature, but a variance of the normal developmental morphology of this bone.

#### *5.3.5.2 Lines of Arrested Development*



Figure 30. Tibiae of Individual Ten presenting lines of arrested development.

Lines of arrested development or Harris lines are defined as “transverse lines of radiodensity at the ends of long bones” (Aufderheide and Rodriguez-Martin 1998). Radiographs of the tibiae and femora of Individual Ten exhibited several prominent lines at the proximal and distal ends of the tibial diaphyses and at least one line was evident on the distal aspect of the femoral diaphyses (Figure 31). Indicators of physiological stress, the lines are formed by decreased chondrogenesis accompanied by a regular rate of mineralization (Aufderheide and Rodriguez-Martin 1998). Aufderheide and Rodriguez-Martin (1998) note that the lines are actually indicative of a post-

traumatic period as the horizontal trabeculae are formed by osteoblastic activity triggered by the resumption of cartilage growth. Although this cessation of growth may not appear to affect the final adult length of the skeletal element in question (Nowak and Piontek 2002) it is possible that it may be significant enough to affect the diaphyseal length when assessing infants and children. As such, it is plausible to suggest that the incongruity between the non-metric and metric age assessments may be due to phases of arrested growth experienced by this individual during development. As bone is continuously remodeled, it is important to note that Harris lines are often obliterated during adulthood or even as early as childhood (Aufderheide and Rodriguez-Martin 1998; Nowak and Piontek 2002).

Lines of arrested development are often associated with periods of malnutrition or disease. However, it should be noted that this is not necessarily always the case. Nowak and Piontek (2002) note that there are numerous causative factors that may result in phases of interrupted growth. Unfortunately, the form of physiological stress placed on osteological development is not identifiable by the Harris lines alone. Other symptomatic factors that affect the skeleton must be present to form an accurate diagnosis. Nevertheless, Rev. Nisbet's letters and diary indicate that the living conditions outside the Mission were poor. The Aboriginal population was often prone to starvation and malnutrition. Disease was ever prevalent and life on the unsettled prairie was difficult. Consequentially, it is not surprising that evidence of stress were present on the skeletal elements of this and other individuals.

### ***5.3.6 Individual Ten Osteological Summary***

Based on the non-metric evidence, Individual Ten was approximately 3 years old +/- 12 months whereas the metric analysis suggests that the individual was approximately 1.5 years of age. However, the presence of lines of arrested development may have played a factor in the metric age assessment. As such, it is plausible to assume that the two forms of non-metric evaluation are a more accurate source of information and that the proposed age range from these assessments is closer to the true age of the individual. The presence of maxillary shovel-shaped incisors indicates that Individual Ten was of Aboriginal decent. The pelvic and mandibular attributes were consistent with that of a female person. The presence of Harris lines suggests that Individual Ten was subject to a physical stress that may have been influenced by malnutrition, disease, or another anomalous factor.

#### **5.4 Grave Eleven**

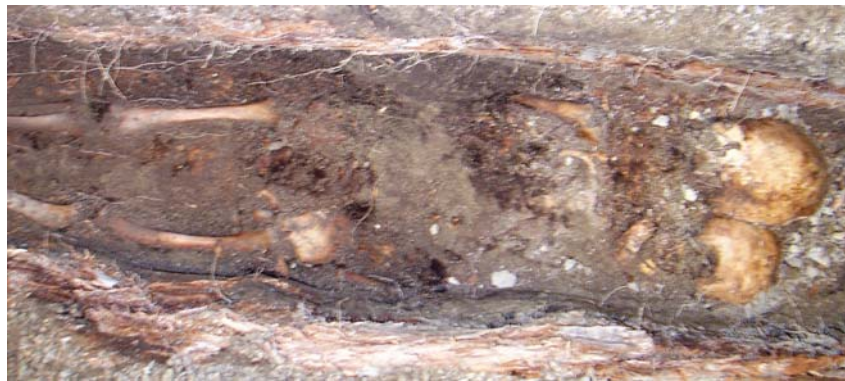


Figure 31. Grave Eleven *in situ* (Courtesy Western Heritage Services Inc.)

##### ***5.4.1 Skeletal Description***

Approximately 345 skeletal fragments were recovered from Grave Eleven (Figure 32) during excavation. Preservation of the osteological material ranged from good to poor. The scapulae, radii, and right humerus exhibited areas of green

discolouration which were likely from contact of copper tacks from the coffin lid. Epiphyses from several elements were recovered which helped to produce a more accurate diagnosis for the age of the individual.

#### ***5.4.2 Determined Age Range***

Both metric and non-metric forms of analysis were used to determine the age of Individual Eleven. However, many of the diaphyseal ends were subject to advanced decomposition and could not be included in the metric evaluation. In addition, much of the skeleton was very fragmentary in nature.

##### *5.4.2.1 Non-Metric Analysis - Epiphyseal Appearance / Fusion*

The occipital bone was represented by the left *pars lateralis* and the temporal bones were represented by petrous-mastoid elements only. The zygomae consisted of a small solitary fragment. As such, no more than a minimal estimation of age could be ascertained based on these elements. The maxilla was too fragmented to assess.

The frontal bone had fused into a single element. Remnants of the metopic suture were present extending superiorly from nasion by approximately one inch. Full closure is normally achieved between ages two and four (Scheuer and Black 2000).

Fragments of the left parietal bone indicate that the parietal eminence was still apparent, but only slightly. It was not clear if the anterior fontanelle had closed. The parietal bone suggests that the individual had reached a developmental morphology consistent with that between birth and early childhood.

Fusion of the greater wings of the sphenoid occurs during the first year of life (Scheuer and Black 2000). In addition to presenting this feature, the foramina Ovale and



Spinousum of Individual Eleven had completed their formation. These foramina are fully formed by the first and second years, respectively (Scheuer and Black 2000; Schwartz 1995). Due to the fragmented nature of the sphenoid, it was not apparent if the dorsum sellae had ossified. The ossification of this feature occurs by the fifth year (Scheuer and Black 2000).

The ethmoid consisted of the developing cribriform plate, crista galli, and nasal conchae. The plate and crista galli had fused with the labyrinths suggesting the individual was approximately one to two years of age.

The mandibular symphysis had fused suggesting Individual Eleven was at least one year of age. The dentition will be discussed in the odontology section.

The vertebral column was highly fragmented. However, it was clear that neurocentral fusion had not occurred in the cervical, thoracic or lumbar vertebrae. The lateral elements of the first sacral vertebra were still separate. The lack of fusion in these elements indicates the individual was less than three years of age at time of death.

Each innominate consisted of three discrete elements. The appearance and size of the ischium was consistent with an individual who was approximately one year of age. Based on images published by Scheuer and Black (2000) the pubic acetabular surface morphology suggests a minimum age of 6 postnatal months.

The ribs, clavicles, scapulae, and ulnae were fragmentary in nature and the remains did not allow for an accurate age assessment to be completed. The radii, humeri, fibulae and metacarpals consisted of the shaft only. Although it is likely that specific epiphyses had formed, they were not recovered and consequentially a definitive age based on these bones could not be proposed.

Epiphyses from the proximal and distal femora were recovered. The small size and ambiguous morphology of the proximal epiphyses suggests that the individual was between 6 post natal months to one year in age.

The proximal tibial epiphysis was recovered during excavation. This element appears by the sixth postnatal week (Scheuer and Black 2000). The distal epiphysis was not recovered; however it usually appears between 3 and 10 months of age.

#### *5.4.2.2 Metric Analysis – Maximum Diaphyseal Length*

Only two elements could be measured to determine the maximum diaphyseal length. The right and left femora measured 121 mm and the left and right tibiae measured 101 and 102 mm, respectively. When compared to tabular data compiled by Scheuer and Black (2000), the femur lengths correlate to an age range of approximately six postnatal months to one year of age. The tibial lengths correspond to an age range of six to nine months postpartum.

#### *5.4.2.3 Odontological Age Range*

Each tooth of the deciduous dentition of Individual Eleven was accounted for during excavation. As the cranium was heavily fragmented, many of the teeth had avulsed from the tooth crypts. Avulsion was also due to the primary level of development attained at the time of death. Although they were identifiable in isolation, the majority of the teeth only consisted of the developing crown and partial root, or in some cases, just the developing crown. Based on crown and root morphology, the deciduous maxillary and mandibular incisors were likely the only teeth that had erupted. Based on Schwartz's (1995) tabular data, this dental pattern suggests that the individual

was approximately 11 months and 23 days old +/- 2 months. Based on data from Ubelaker (1978) and Scheuer and Black (2000), the individual was 1 year of age +/- 4 months.

#### *5.4.2.4 Individual Eleven Age Summary*

The non-metric age determination analysis based on epiphyseal fusion and appearance produced an approximate mean age of 1.5 years of age. This conclusion correlates to the ages of 1 year +/- 4 months and 6 postnatal months to 1 year produced by the odontological and metric age assessments, respectively. Based on these findings, Individual Eleven was approximately 1 year old +/- 6 months.

#### *5.4.3 Racial Affiliation*

Racial affiliation was determined by the presence or absence of shoveling on the lingual aspect of the maxillary incisors (Refer to Section 3.3.1.3). The incisors tested positive for this trait indicating Individual Ten was of First Nation or Métis ancestry.

#### *5.4.4 Sex Determination*

The sex of this individual could not be determined.

#### *5.4.5 Individual Eleven Osteological Summary*

The osteological evaluation of Individual Eleven suggests that this person was approximately 1 year of age +/- 6 months at time of death. The presence of lingual maxillary incisor shoveling indicates the individual was of Native American or mixed

ancestral descent. No discernable evidence of trauma or pathological change was observed. The sex of this individual could not be determined.

## 5.5 Grave Twelve



Figure 32. Individual Twelve *in situ*

### 5.5.1 Skeletal Description

Approximately 229 bone fragments were recovered from Grave Twelve (Figure 33). The fragmented nature of the skeletal material and very young age of the individual made the assessment somewhat challenging. Individuals Twelve and Seventeen exhibited a bizarre developmental anomaly which will be discussed within the Pathology section.

### 5.5.2 Determined Age Range

The age evaluation was based predominantly on the non-metric epiphyseal development examination. Elements that were not recovered, too fragmented to assess

or inconclusive have been omitted from the non-metric analysis description. Due to incompleteness, only one element qualified a metric assessment. Only three identifiable tooth buds were recovered. Consequentially, only a minimal odontological study could be performed.

#### *5.5.2.1 Non-Metric Analysis - Epiphyseal Appearance / Fusion*

The morphology of the occipital bone was consistent with that of a level of development attained at or near birth. The four primary components of the bone were identified as discrete entities. Fusion of the jugular and condylar limbs forming the hypoglossal canal walls occurs near the end of the first postnatal year (Scheuer and Black 2000). Individual Twelve presented patent hypoglossal canals indicating the individual was less than one year of age. Furthermore, the basioccipital element was still longer anteroposteriorly than it was bilaterally. This morphology intimates an age of less than six postnatal months.

Fusion of the squamotympanic and petromastoid elements of the temporal bone occurs during the first year (Scheuer and Black 2000). This level of development had been attained in this individual. Albeit fused to the bone, the tympanic ring was still easily identifiable around the external auditory meatus [EAM] suggesting the individual's degree of temporal development was comparable to that of a six month old. The EAM was beginning to narrow suggesting the person was one year of age or less.

The frontal bone was still present as two separate centres of ossification, the metopic suture being completely patent. Union of these elements usually commences during the first year.

The greater wings of the sphenoid had not yet fused to the body indicating the individual was less than one year of age. Due to the fragmented nature of the bone, it was not possible to tell if the lesser wings had fused to the body.

The vomer was remarkably intact. It exhibited a V-shaped base and the laminae were present. The mandibular symphyseal surface was just beginning to fuse. In addition, neurocentral and interlamellar fusion were not evident in any vertebrae. The appearance of these bones suggests the individual was a neonate at time of death.

Iliac acetabular morphology was consistent with that of an individual who was between birth and six postnatal months.

The clavicles, humerii, ulnae, tibiae, and femora were represented by the diaphyseal elements only. It is not clear if they had not developed or were overlooked during excavation.

#### *5.5.2.2 Metric Analysis – Maximum Diaphyseal Length*

Maximum diaphyseal length of the left humerus was 61 mm. When compared to Scheuer and Black's (2000) tabular data, this length corresponds to an age of 38 fetal weeks. Unfortunately, the distal width could not be measured due to incompleteness. The remaining elements could not be assessed.

#### *5.5.2.3 Odontological Age Range*

Three identifiable teeth were recovered from this grave. The right maxillary deciduous first incisor, left maxillary deciduous second incisor, and right maxillary deciduous canine were represented by unerupted developing crowns. Five unidentifiable unerupted formative crowns were also recovered. The first deciduous mandibular

incisors are usually the first teeth to erupt. This occurs at approximately 7 months 9 days +/- 2 months (Schwartz 1995). Based on the odontological evidence, it is probable that the individual was less than seven postnatal months of age. Unfortunately the maxillae and mandible was too fragmented to perform a radiographic analysis.

#### *5.5.2.4 Individual Twelve Age Summary*

The proposed age ranges produced by the non-metric, metric, and odontological assessments indicated that Individual Twelve was likely a neonate at time of death.

#### *5.5.3 Racial Affiliation*

Racial affiliation was determined by the presence or absence of shoveling on the lingual aspect of the maxillary incisors (Refer to Section 3.3.1.3). The incisors tested positive for this trait indicating Individual Ten was of First Nation's or Aboriginal mixed ancestry.

#### *5.5.4 Sex Determination*

Due to the incomplete nature of the mandible and ilia determination of the sex of the individual was not possible.

#### *5.5.5 Pathology*

Figure 34 exhibits the upper and lower leg bones of Individual Twelve. As demonstrated here, the individual presents tibiae disproportionate in size to the adjacent femora. Other than being malformed in size, no other pathological process seemed to

affect them. Several hypotheses were generated proposing the causative agent responsible for this abnormality.

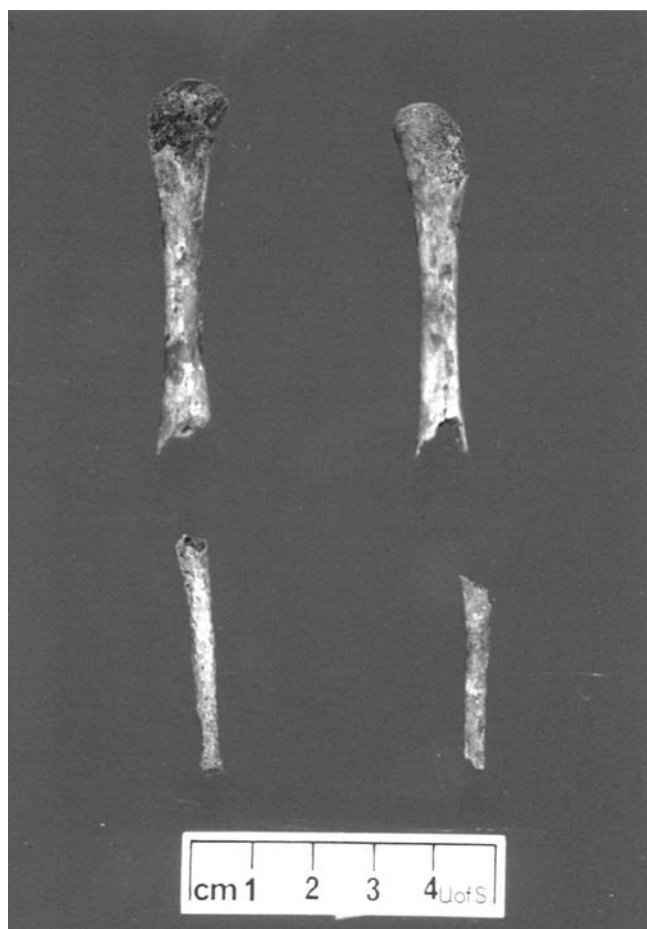


Figure 33. The femora (top) and tibiae (bottom) of Individual Twelve

The variola virus is the pathogen that causes smallpox, an acute disease distinguished by the proliferation of vesicles within the skin (Aufderheide and Rodriguez-Martin 1998). Although skeletal involvement is rare, osteomyelitic skeletal involvement, growth retardation, ankylosis, subluxation, and degenerative joint disease may develop as secondary symptoms (Aufderheide and Rodriguez-Martin 1998). Although decrease in growth rate may occur, it is likely that cessation of growth would have resulted in the formation of Harris lines. Upon radiological examination, no Harris



lines were identifiable in either of the tibiae. In addition, the skeletal remains exhibited no evidence of any other pathological process.

In 1870, smallpox broke out on the Plains. Nisbet's letters indicate that the disease was present at Fort Carlton and the surrounding area. Upon hearing of the outbreak, Rev. Nisbet began to vaccinate the Mission population and the Cree camped at or near the Mission. Ninety or more individuals were vaccinated in the spring and another 50 were vaccinated in the summer (Abrams 1976; *The Home and Foreign Record*, February 1871). Fearful of the disease, the local First Nations people were determined to prevent its dissemination to the Mission. When smallpox had infected several individuals at Carleton House, Rev. Nisbet's presence was requested. However, the local Cree blatantly explained that if he traveled from the Mission and consequently risked becoming contaminated with the disease that "they would never suffer [him] to set [his] foot again in this place" (*The Home and Foreign Record*, February 1871). Furthermore, the Cree decided to disperse and relocate to the northern lakes and woods (*The Home and Foreign Record*, February 1871). These precautionary measures culminated in the prevention of smallpox spreading north to the Mission. In a letter to his brother, Rev. James Nisbet states, "Then smallpox broke out in the west early last year...we have not heard of even one of those vaccinated as having been taken with the disease, nor has the disease come to or passed this place." (J. Nisbet to H. Nisbet, letter, 16 January 1871, Nisbet Family Fonds, Glenbow Archives, Archives Society of Alberta 2009). As such, it is very unlikely that any individuals buried at Prince Albert would be infected with the smallpox virus.

Tibial dysplasia or hypoplasia is the abnormal development or underdevelopment of the tibia (Dorland's Pocket Medical Dictionary, 27<sup>th</sup> Ed. 2004). Specifically,

micromelia is the presence of abnormally small appendages (Aufderheide and Rodriguez-Martin 1998). However, tibial hypoplasia is frequently affiliated with skeletal malformations of the upper appendages, pelvis, and knee (Aufderheide and Rodriguez-Martin 1998). The recovered remains of Individual Twelve did not demonstrate any other evidence of deformity. However, this condition is also commonly associated with *Talipes equinovarus* or clubfoot (Aufderheide and Rodriguez-Martin 1998). Unfortunately, none of the tarsals, metatarsals, or pedal phalanges were recovered from Individual Twelve to verify or negate the existence of this congenital malformation. Furthermore, a literature search demonstrated that most dysplasias and hypoplasias exhibit the proximal tibia and distal femur as being in proportion to one another. There appears to be no evidence of this precise type of malformation within the medical literature thus far.

Poliomyelitis is a viral infection that can affect the central nervous system, resulting in paralysis and less frequently, death (Aufderheide and Rodriguez-Martin 1998). Skeletal involvement is secondary; Paralysis of the affected muscles results in the development of disuse atrophy and ultimately diffuse osteoporosis of the cortical and cancellous bone (Aufderheide and Rodriguez-Martin 1998). No osteoporotic activity was apparent. In children, *coxa valga*, or the increased angle of the femoral neck and *pes cavus*, the increase angle of the plantar arch are often symptomatic of poliomyelitis (Aufderheide and Rodriguez-Martin 1998), however neither of these attributes were observed as the affected elements were not recovered.

Archaeologist error should not be excluded. It is possible that the tibiae may have come from another individual, however this is very unlikely given the age and location of the remains.

#### ***5.5.6 Individual Twelve Osteological Summary***

Individual Twelve was an Aboriginal or mixed ancestral neonate. The sex of the individual was indeterminate. The tibiae were affected by a pathological process, being very small in size and disproportionate to the distal aspect of the femur. Although several hypotheses have been generated to explain this abnormality, the causative agent remains unknown.

### **5.6 Grave Thirteen**



Figure 34. Individual Thirteen *in situ* (Courtesy Western Heritage Services Inc.)

#### ***5.6.1 Skeletal Description***

Individual Thirteen (Figure 35) was an adult and as such, required different methods of osteological evaluation as compared to the previous five individuals. Approximately 294 fragments were recovered and bone preservation was good to very

good. The dentition presented evidence of pathological change as did the cranium. The mandible exhibited signs of medical intervention.

### ***5.6.2 Determined Age Range***

Three methods of age determination were used to assess the age of Individual Thirteen. The pubic symphysis, sternal rib ends, and auricular surface of the ilia were examined and evaluated based on their appearance, porosity, osteoclastic or osteogenetic activity. As the skeleton is developmentally complete as an adult, these forms of age determination examine how bone ages, degenerates and changes throughout the mature life of an individual.

#### ***5.6.2.1 Pubic Symphyseal Surface***

The pubic symphyseal surfaces were compared and evaluated against tabular and pictorial data published by Byers (2005) summarized from Meindl et al. (1985) and Krogman (1962) and by White (2000) based on Todd's (1920) original research. The criteria are based on the appearance of the face, margins and extremities of the symphyseal surface.

The pubic surface of Individual Thirteen demonstrated a reduced appearance to the ridges and furrows suggesting an age range of approximately 25 to 29 years of age. The ventral or anterior margin of the pubic face demonstrated a distinct beveled surface and a forming rampart suggesting the individual was between 25 to 29 years old. The dorsal margin exhibited a well developed plateau. This morphology is consistent with an individual between 20 to 29 years of age. The superior extremity morphology of the symphyseal surface was consistent with that of a 30 to 34 year old as a definitive edge

had begun to form. The inferior extremity was minimally defined and therefore represented an age group between 20 and 29 years of age.

#### *5.6.2.2 Auricular Surface*

The auricular surface was compared to tabular and illustrative data published by Byers (2005) summarizing the work completed by Lovejoy et al. (1985). The approximated age range was based on the transverse organization of billows or striae, granularity, apical activity, retroauricular appearance, and porosity.

Individual Thirteen demonstrated both billowing and striations along the auricular surface. However, there were fewer billows than striae suggesting the individual was approximately 25 to 29 years of age. The surface was slightly coarse indicating the individual was 25 to 29 years old at time of death. Apical activity was minimal propounding an age range of 30-34 years. No evidence of porosity or retroauricular activity was present indicating the individual was between 25 and 29 years of age.

#### *5.6.2.3 Sternal Rib Ends*

Tabular data published by Byers (2005) was the basis for the sternal rib end assessment. Compiled from Iscan et al. (1984, 1985) the surface, surface contour, rim edge, and rim contour were evaluated and a comparable age range was attributed based on the appearance of these characteristics.

The articular surface of the ribs was smooth. This feature is consistent with an individual between 19 and 29 years of age. Individual Thirteen also demonstrated a v-shaped surface contour and rim edges that were round to sharp in nature suggesting the

individual was between 20 to 39 years old. The rim contour was wavy to irregular indicating the individual was between 20 and 29 years of age at time of death.

#### *5.6.2.4 Individual Thirteen Age Summary*

A mean age range was calculated based on the information acquired during the pubic symphyseal surface, auricular surface and sternal rib end evaluations. Individual Thirteen was approximately 23 to 33 +/- 2 years of age.

#### *5.6.3 Sex Determination*

Sex was assigned to Individual Thirteen based on the non-metric aspects of the cranium and innominates. A metric assessment could not be performed based on the incomplete nature of the skull. However, several measurements were completed. These will be placed in Appendix A in Table 5-3.

##### *5.6.3.1 Non-Metric Cranial Assessment*

Only seven out of twelve features could be evaluated due to the incompleteness of the cranium. The skull demonstrated a moderate degree of robusticity overall. The glabellar prominence and superciliary eminence exhibited a level of robusticity normally apparent in males. Nasion was markedly depressed also suggesting that the individual was male. The forehead shape and the mastoid process were moderate in appearance.

##### *5.6.3.2 Innominate Evaluation*

Ten anthroposcopic traits were examined: ilial shape, shape and depth of the greater sciatic notch, presence of a preauricular sulcus, subpubic angle, shape of the

pubis, presence of scars of parturition, shape of inferior ramus, beveling of subpubic ramus, auricular platforming, and the shape of the obturator foramen. Each trait clearly presented positive male attributes.

#### *5.6.3.3 Sex Determination Summary*

The cranial assessment was minimal due to the lack of intact skeletal elements. As such, the outcome was primarily based on the pelvic traits which unambiguously dictated that Individual Thirteen was male.

#### *5.6.4 Racial Affiliation*

Ancestral assessment was based on non-metric cranial and dental traits. A metric evaluation could not be completed as the skull had been compacted due to overburden pressure and was incomplete.

##### *5.6.4.1 Non-Metric Cranial and Dental Evaluation*

Based on the data compiled by Byers (2005), four series of anthroposcopic traits were examined: the nose, face, vault, and dentition. The root, bridge, spine, and inferior border and width of the nasal aperture were consistent with those of a Caucasian person. The facial profile and shape could not be assessed due to the skewed nature of the skull. The orbits were angular and receding suggesting the individual was white. The vault presented complex sutures and a small brow ridge. These features are more apparent in Asian populations. Individual Thirteen also presented small jaws, a parabolic palate and spatulate incisors, features commonly associated with persons of Caucasian ancestry.

Based on the results of the non-metric assessment, it is likely that Individual Thirteen was of Caucasian descent.

### ***5.6.5 Pathology and Developmental Variation***

#### ***5.6.5.1 Discrete Traits***

Discrete traits are non-pathological anomalies which express a morphological variation to typical skeletal anatomy. While the genetic origins that produce these features are unknown, discrete traits are generally manufactured in response to soft tissue or bone development (Schwartz 1998; White 2000). Schwartz (1998) identifies five primary groups of non-metric variations: hyperostotic, hypostotic, foramina, articular facets and other. Hyperostotic traits are characterized by the presence of increased bone production in response to soft tissue activity (Schwartz 1998). For example, Individual Thirteen presented incomplete jugular foramen bridging on the left aspect of the cranium. The right foramen could not be assessed as that portion of the skull was not intact. Individual Thirteen also expressed bilateral marginal tubercles, supratrochlear notches and suprascapular notches. Hypostotic traits are formed by incomplete or arrested development of a structure or structures (Schwartz 1998). Individual Thirteen did not present any discrete traits of this type. However, a patent metopic suture is a good example of a hypostotic variant. The presence of additional or accessory foramina is another category dictated by Schwartz (1998). He suggests that discrete foramina differ in development from those formed by the forking of single foramina by a bony plate or spur and as such should be placed in a separate category (Schwartz 1998). Individual Thirteen presented a single supraorbital foramen along the midline of the left orbit. One primary and two accessory zygomaticofacial foramina



were observed on the left zygoma and three accessory foramina were noted on the right zygoma. A parietal foramen was observed on the left parietal bone. The left mastoid process exhibited a single mastoid foramen and the mandible presented bilateral mental foramina. Accessory lesser palatine foramina were present on the left palate. Articular facets are also subject to variation. They may be singular, pinched, doubled, or subdivided (Schwartz 1998). Individual Thirteen did not present any facet variations. Other discrete traits that may be considered include bifid anterior nasal spine, and the asymmetry of the jugular foramen. However, these features were not considered or noted during the evaluation process.

#### *5.6.5.2 Pathology*

Individual Thirteen demonstrated evidence of localized cranial and odontological pathological processes. Juvenile porotic hyperostosis was present on the frontal bone and anterior parietal margins. There was a maxillary cavity located on the lingual and anterior buccal surface of the right first molar (RM<sup>1</sup>). A minor degree of attrition was present on all teeth. Major caries were present on the right maxillary fourth premolar and first molar (RP4 and RM1). Minor maxillary caries present include: the right lateral incisor, the left and right medial incisor, and the left first and second molars. Minor mandibular caries present include: the right second molar, and the left second and third molars. Both the left and right first molars were absent due to excessive root resorption. This individual also exhibited Enamel Hypoplasia.

##### *5.6.5.2.1 Juvenile Porotic Hyperostosis*

Porotic hyperostosis is an osteological reaction of the outer table of the frontal and parietal bones generally attributed to the presence of an anemia (i.e. sickle-cell anemia, iron deficiency anemia). Individual Thirteen presented hyperostotic lesions which had healed over. This suggests that the individual had developed this response to infection during childhood or infancy as individuals who contract anemia during their adult life do not present a cranial bone response but an osteogenetic reaction within the medullary cavity of the long bones (Aufderheide and Rodriguez-Martin 1998).

#### 5.6.5.2.2 Dental Caries

Dental caries is a transmissible disease primarily caused by the proliferation and actions of bacteria within the oral cavity (Aufderheide and Rodriguez-Martin 1998). The proliferation of said bacteria may be influenced by tooth structure, diet, types of oral bacteria already present, and mineral content (i.e. fluoride) (Schollmeyer and Turner 2004). Irregularities on the occlusal surface of the tooth, spaces formed by tooth crowding or other areas of the crown surface where food may become lodged present opportunities for the bacteria to congregate whereby increased levels of lactic acid are concentrated on a single area, destroying the tooth enamel (Aufderheide and Rodriguez-Martin 1998; Schollmeyer and Turner 2004).

This odontological pathological condition is diagnosed under two categories based on the location of the caries themselves. Crown caries are lesions formed superior to the cemento-enamel junction [CEJ] whereas root caries are formed inferior to the junction. Root caries typically only occur in adults where chronic periodontitis has exposed the roots rendering them susceptible to bacterial activity (Aufderheide and Rodriguez-Martin 1998).

#### 5.6.5.2.3 Chronic Periodontal Disease

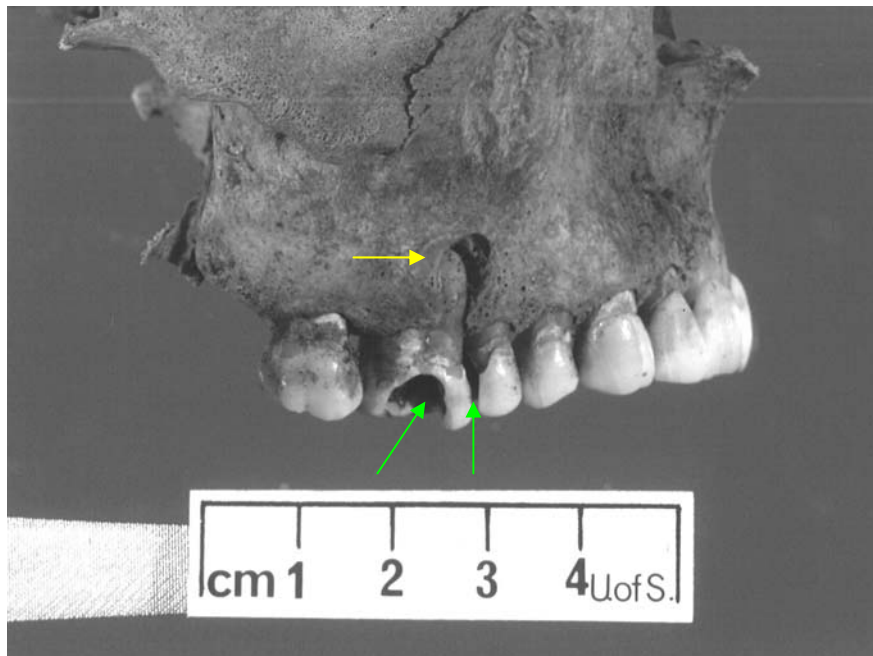


Figure 35 Individual Thirteen - note periapical cavity from chronic periodontal disease

Individual Thirteen presented both major and minor caries on several teeth. In addition, a large cavity was evident within the maxillary alveolar bone superior to RM<sup>1</sup>. The morphology of this locus is textbook consistent with that of chronic periodontal disease (Figure 36). The elongated cavity envelops the root, commences at the alveolar border and extends towards the apex of the root. Periodontitis develops as a result of chronic gingivitis which progresses forming bacteria-filled pockets around the tooth that ultimately dissolve the alveolar bone (Dias and Tayles 1997). Periodontal disease may also be the result of severe attrition (Aufderheide and Rodriguez-Martin 1998) however, the degree of attrition Individual Thirteen presented had not likely progressed enough to warrant the onset of periodontitis. In addition to a severe localized infection, Individual

Thirteen also presented generalized chronic periodontal disease. Alveolar bone resorption was apparent along the entire dentition, exposing the roots of each tooth.

The major carious lesions affecting the entire occlusal and buccal surface of RM<sup>1</sup> and the occlusal surface of RP<sup>4</sup> may have been the causative agent of the localized periodontic infection as they would have allowed food to become pushed up and trapped in between the lytic defects along the CEJ (refer to Figure 36, green arrows).

Subsequently, the bacterial formation of dental plaque ensued, resulting in the progressive resorption of the alveolar bone matrix. Erosion of the periodontum expanded superiorly up and around the root, exposing it to further infectious processes. The periodontal ligament appeared to have still been intact, as the tooth had not yet avulsed.

This defect differs from periapical granulomata and apical periodontal cyst and abscess formation as the lesion extends longitudinally from the alveolar border instead of forming a circular smooth loculus situated directly around the apex of the root (Dias and Tayles 1997).

#### 5.6.5.2.4 Linear Enamel Hypoplasia

Linear enamel hypoplasia is a developmental defect that presents as transverse bars of reduced enamel thickness found on the maxillary incisors and the mandibular canines and frequently on the mandibular incisors. Enamel hypoplasia is often limited to the facial aspect of the dentition however; it is classically defined as encircling the tooth (Aufderheide and Rodriguez-Martin 1998). These areas of depleted enamel deposits are developed during episodes of physiological stress such as malnutrition or disease which result in the cessation of amelogenesis (Aufderheide and Rodriguez-

Martin 1998; Hubbard, Guatelli-Steinberg, and Sciulli 2009; Ritzman, Baker and Schwartz 2008).

Researchers have attempted to develop accurate methods of assessing age and stress episode duration using linear enamel hypoplasias. However, the non-linear secretion timeline of enamel layers or perikymata makes this a difficult task. Ritzman, Baker, and Schwartz (2008) demonstrated that the chart and regression methods produce ages that are significantly younger than the actual age as they do not take cuspal enamel development into account. These methods also assume that perikymata develop at a linear rate (Ritzman, Baker, and Schwartz 2008). The Reid and Dean (2000) decile method does assume a non-linear development rate; however, this method produces ages significantly older (up to 1 year) than those previously discussed (Ritzman, Baker, and Schwartz 2008). Further testing of these methodologies is warranted. Until the actual accuracy of these methods is verified, age data based on these methods should be considered with a degree of criticism.

An article by Hubbard, Guatelli-Steinberg and Sciulli (2009) examines the validity of correlating enamel hypoplasia width to stress episode duration. Basing their examination on Reid and Dean's model of enamel growth and age correlation, they assumed that the number of perikymatal layers and their spacing within the defect would relate to the length of time the individual was under severe physiological stress. They note that macroscopic measurement of the furrow is not accurate as it overestimates the time of stress duration including both the recovery and stress episode. By using scanning electron microscopy, they hoped to focus on the stress period perikymata alone. However, Hubbard, Guatelli-Steinberg and Sciulli (2009) concluded

that “the widths of individual defects are virtually useless as indicators of relative stress episode duration” (Hubbard, Guatelli-Steinberg and Sciulli 2009: 188).

#### *5.6.5.3 Medical Intervention*

An amalgam (Figure 37) was present on the central occlusal surface of the left mandibular second molar (LM<sub>2</sub>). The lack of burial records made dating this odontological procedure very difficult. The specimen was sent to the College of Dentistry at the University of Saskatchewan for analysis but for reasons unknown, no results were ever produced. However, a historic examination of dentistry in Saskatchewan may provide some insight as to the origin of the amalgam.

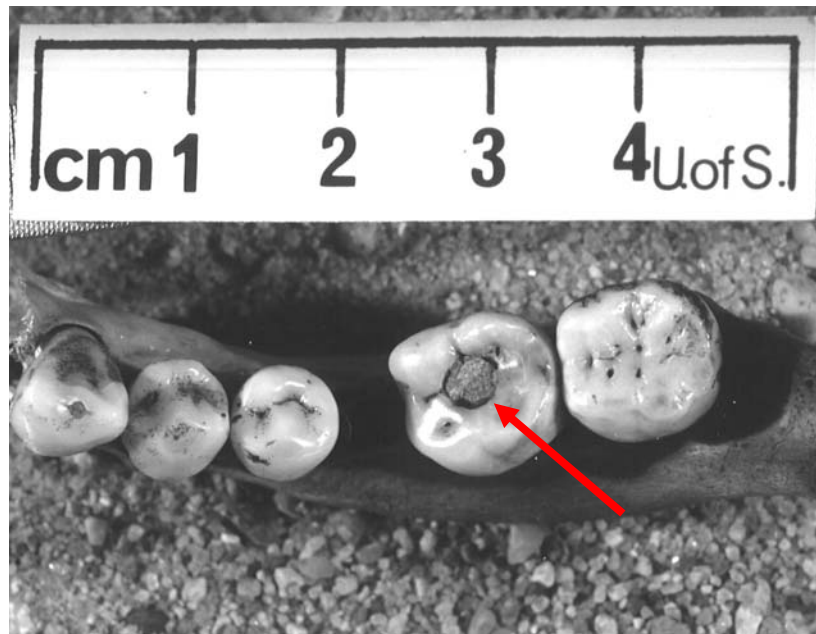


Figure 36. Amalgam of LM<sub>2</sub>

Dr. A. Everett Porter, the region’s first physician, arrived in Prince Albert in 1877. IF this amalgam was implanted before that time, it is likely that the procedure took place either in the east (Canada proper, at the time) or overseas (i.e. Scotland). However,

if the procedure occurred between 1877 and 1886, when the first dental practice in Saskatchewan (at Regina) was established, then this may be some of the first evidence of dental practice in Saskatchewan.

#### ***5.6.6 Individual Thirteen Osteological Summary***

Individual Thirteen was a Caucasian male approximately 23 to 33 years of age +/- 2 years. This individual presented numerous signs of ill health including evidence of anemia and a poor dentition. It is possible that the large infection due to chronic periodontitis may have contributed to the death of the individual.

### **5.7 Grave Fourteen**

#### ***5.7.1 Skeletal Description***

The remains of Individual Fourteen were in a highly fragmented state. Approximately 229 fragments were recovered however, poor preservation prevented the correlation of many of these fragments to a specific element.

#### ***5.7.2 Age Determination***

Due to the incomplete nature of the remains, only two of the skeletal elements could be assessed for relative age. The dentition was the dominant factor in determining the age of the individual. In addition, metric analysis could not be completed as the long bones were too fragmentary to measure. Only the elements which could be evaluated will be discussed. As very little can be said regarding the maxillary component of the analysis, the odontology will be considered in the next section as well.

#### *5.7.2.1 Non-Metric Analysis - Epiphyseal Appearance / Fusion*

The petrous portion of the temporal bone was consistent in morphology with that of an individual in the stages of late fetal life or older. The subarcuate fossa was small and round.

The maxilla was fully formed and all of the deciduous teeth were housed in their crypts with the exception of the medial and lateral incisors which may have just barely begun to erupt. Based on these findings, Individual Fourteen was an infant between birth and 9 postnatal months of age.

#### *5.7.2.2 Individual Fourteen Age Summary*

As very little information could be ascertained from the remains of this individual, the accuracy of this age assessment may be in doubt. However, based on these minimal findings, Individual Fourteen was likely between 0 and 9 postnatal months of age.

#### *5.7.3 Racial Affiliation*

Racial affiliation was determined by the presence or absence of shoveling on the lingual aspect of the maxillary incisors (Refer to Section 3.3.1.3). The incisors tested positive for this trait indicating Individual Fourteen was of First Nation's or Aboriginal mixed ancestry.

#### *5.7.4 Sex Determination*

Due to the incomplete nature of the mandible and ilia determination of the sex of the individual was not possible.



#### ***5.7.5 Individual Fourteen Osteological Summary***

Little information could be obtained regarding this individual due to the lack of remains recovered upon excavation. The dentition suggests an approximated age range of 0 to 9 months postnatal. The sex and racial affiliation of Individual Fourteen remain undetermined. No evidence of trauma or pathological change was observed.

### **5.8 Grave Fifteen**



Figure 37. Individual Fifteen *in situ* (Courtesy Western Heritage Services Inc.)

#### ***5.8.1 Skeletal Description***

Approximately 501 fragments and elements were recovered from Grave Fifteen (Figure 38) during excavation. Preservation of this young child was very good to excellent allowing for a thorough osteological investigation to be completed.

### **5.8.2 Determined Age Range**

#### *5.8.2.1 Non-Metric Analysis - Epiphyseal Appearance / Fusion*

The occipital bone was morphologically consistent with that of a 2 to 4 year old. The *partes laterales* had fused to the squamous portion of the occipital and the hypoglossal canal complete. The basioccipital had not yet fused to the exoccipitals.

Individual Fifteen exhibited well-developed mastoid processes and the foramina of Huschke had closed forming a complete tympanic plate on each temporal bone. These features are present in young children nearing five years of age (Scheuer and Black 2000).

Fused into a single element, the frontal bone presented little to no remnant evidence of the metopic suture. Closure of the metopic suture occurs between the second and fourth year (Scheuer and Black 2000).

The parietals, zygomae, and maxillae were fully formed upon examination. The mature morphology of these bones suggests the individual was between three and six years of age.

This individual demonstrated fusion of the greater wings of the sphenoid to the sphenoidal body which occurs during the first year of postnatal life (Scheuer and Black 2000). Individual Fifteen also presented complete foramina spinosum and an ossified *dorsum sellae*. The completion of these features occurs during the second and third years, respectively (Scheuer and Black 2000). The degree of ossification of the sphenoid suggests an age range of two to three years of age.

The superior border of the nasal bones had become serrated in appearance, suggesting the individual was approximately three years old.

The mandible was fused into a single bone. This completion occurs during the first year of development (Scheuer and Black 2000).

Bilateral neurocentral fusion was observed from the third to the seventh cervical vertebrae. The second and third cervical vertebrae presented complete transverse foramina. The *os dens* of C2 had not yet fused to the laminae. Lastly, the anterior bar of the first cervical vertebrae had formed, but had not yet centrally fused. It was unclear if the posterior bar had fused due to the incomplete nature of the element. Based on the outward appearance of the cervical spine, the individual was likely between three and four years of age.

Posterior laminar fusion had occurred along each of the thoracic vertebrae. However, neurocentral fusion had only occurred in the eleventh and twelfth thoracic elements. These findings suggest an age range of two to four years of age.

The lumbar vertebrae exhibited complete fusion with the exception of L5 where the laminae were nearly united. The fusion of the primary vertebral centers of ossification occurs between the third and fifth years (Scheuer and Black 2000).

Fusion of the sacral elements indicated that the individual was between two and six years of age. The lateral portions of S1 and S2 had fused to the centrum and laminar elements and neurocentral fusion had occurred. The sacral vertebrae were still discrete entities. Complete fusion of the sacrum does not occur until age twenty-five or later (Scheuer and Black 2000).

The sternum was represented by the manubrium and the second and third sternebrae. As these elements were identifiable in isolation, it is likely that the individual was between three and six years old.

Still apparent as separate entities of ossification, the morphological characteristics of the ilia, ischia, and pubii suggested that Individual Fifteen was between four and five years of age. The ilial acetabular surface demonstrates a defined ilipectineal promontory, a distinct articular fossa, and identifiable ischial and pubic articular surfaces. The ischiopubic articular surface was a flat ridge.

The coracoid process of the scapula was identifiable as a separate centre of ossification. This characteristic is observed in individuals three years of age and older (Scheuer and Black 2000). The subcoracoid ossification centre had not yet developed but this does not appear until age eight (Scheuer and Black 2000).

Development of the proximal humeral epiphysis had progressed to the level equivalent to that of a young child. Each of the proximal epiphyseal centres of ossification had fused forming a composite epiphysis. This fusion occurs between the second and sixth year of development (Scheuer and Black 2000). A Y-shaped groove was identifiable on the distal surface of the epiphysis suggesting an age between three and 8 years. No identifiable elements from the distal epiphyses were recovered.

Only the distal epiphyses and the shaft of the radii were recovered. The distal epiphysis of the radius had not yet achieved a triangular shape and was still ovoid in appearance suggesting an age range of approximately two to five years (Scheuer and Black 2000).

The femur was represented by each of the primary elements. The inferior surface of the proximal epiphysis exhibited a large projection, but the *fovea capitis* was not yet evident. The distal epiphysis exhibited a central elevation and blunt transverse ridge on the inferior surface. The high lateral lip was just beginning to form. Based on the morphology of these elements, Individual Fifteen was between five and six years of

age. However, the greater trochanter was identifiable in isolation and was consistent in appearance with that of a seven to eight year old.

The tibial proximal epiphysis presented a developing intercondylar eminence and posterior medial groove. The anterior intercondylar region was not yet distinctive. The tibiae were also represented by the diaphysis and the distal epiphysis which was ovoid in shape and exhibited a raised ridge on the inferior surface. These features suggest that the individual had reached an age between four and eight years old.

The right fibula was represented by the diaphysis and the proximal epiphysis whereas the left only consisted of the diaphyseal element. The proximal epiphysis appears during the fourth year in females and during the fifth year in males (Scheuer and Black 2000). The appearance of this bony feature was consistent with an individual near that age range.

The morphology of the calcaneus was comparable to that of a three to four year old. The talus was consistent with that of an individual nearing 6 years of age.

#### *5.8.2.2 Metric Analysis – Maximum Diaphyseal Length*

The maximum diaphyseal lengths were measured for the clavicular, humeral, ulnar, radial, femoral, tibial, and fibular elements. Linear regression equations were not utilized as the individual was clearly well into post-natal development at the time of death. Consequentially, it was possible to compare the measurements directly to Scheuer and Black's (2000) tabular data to acquire an age range. The clavicle length was consistent with an age of approximately 6 years. The humeral, ulnar, tibial and fibular lengths suggest the individual was between 3.5 and 4 years of age. The radial diaphyseal lengths propose an age of 3.5 years of age.

#### *5.8.2.3 Odontological Age Range*

Individual Fifteen presented a complete deciduous dentition which is complete by the third year +/- 12 months (Scheuer and Black 2000). Many of the maxillary teeth had avulsed from their crypts although all were recovered during the excavation. Consequentially, this prohibited a maxillary radiograph to be taken, although an external odontological assessment could still be performed. However, a mandibular radiograph was completed permitting subperiodontal examination.

Beneath the deciduous maxillary dentition, the permanent first and second incisors could be observed in the later stages of development. The well-developed first permanent molars could be observed through the broad developing crypt aperture. The posterior aspects of the maxillae were incomplete. As such, second permanent molar growth could not be accounted for.

The lower dentition was consistent with that of an individual in their fifth year +/- 16 months. Radiographic analysis demonstrated that much of the incoming permanent dentition was well developed. Root development had commenced in the canines and particularly in the first permanent molar which exhibited both roots at an early stage of apical growth. The first permanent molars were also observed through the developing crypt aperture. In addition, the crypt for the second permanent molar was forming.

Based on dental morphology, Individual Fifteen was between 4 and 5 years of age.

#### *5.8.2.4 Individual Fifteen Age Summary*

Based on the non-metric osteological evaluation, a mean age of 4 years was derived for Individual Fifteen. This is congruent with a calculated mean age of 4 years based on the metric assessment. These ages are also in agreement with the odontological age range which was estimated to be between four and five years. As each method of assessment produced a similar age, it is very likely that Individual Fifteen was approximately four years old at time of death.

### ***5.8.3 Racial Affiliation***

Racial affiliation was determined by the presence or absence of shoveling on the lingual aspect of the maxillary incisors (Refer to Section 3.3.1.3). The incisors tested positive for this trait indicating Individual Fifteen was of First Nation's or Métis ancestry.

### ***5.8.4 Sex Determination***

Sex determination in Individual Fifteen was based on mandibular and iliac morphology. The mandible presented a rough median sagittal line, an angular symphyseal base, an angular and abrupt corpus and a wide, angular mental protuberance. Each of these traits is consistent with that of a male individual. Gonial eversion was continuous in nature. This trait quality is more often exhibited in females. The ilium presented a greater sciatic notch angle that was approximately 90 degrees and a deep greater sciatic notch depth. Each of these traits is male in nature. Individual Fifteen also presented an arch criterion that intersected with the auricular surface. This characteristic is generally observed in females. The iliac crest curvature was indeterminate.

This individual tested female for 6 out of 9 sexually dimorphic traits suggesting it was likely Individual Fifteen was of the female sex.

#### ***5.8.5 Individual Fifteen Osteological Summary***

Individual Fifteen was of First Nation or Métis ancestry, approximately four years of age and possibly male. The skeletal remains presented no evidence of pathological activity either radiologically or directly observed. As such, the cause of death was a soft tissue malady or injury that did not sustain skeletal involvement.

### **5.9 Grave Sixteen**



Figure 38. Individual Sixteen *in situ* (Courtesy Western Heritage Services, Inc.)

#### ***5.9.1 Skeletal Description***

Approximately 297 fragments and elements were recovered during the excavation of Grave Sixteen (Figure 39). Preservation of this individual was fair to



poor, prohibiting in-depth analysis. Metric and much of the non-metric analysis of the cranium was not possible due to incompleteness and post-mortem distortion and disarticulation.

### ***5.9.2 Determined Age Range***

Due to poor preservation, only one method of age determination could be performed. The auricular surface was assessed based on its bony morphology. The transverse organization of this ear-shaped articular surface presented no billows and vague striae suggesting the individual was between 40 and 44 years of age. The granularity of this surface ranged from granular to dense. This degree of granularity is observed in individuals between 40 and 44 years of age. Apical activity could not be assessed due to the poor preservation of the bone in this region. The retroauricular surface presented slight to moderate osteophytic activity which is consistent with an individual between 40 and 44 years. Porosity of the auricular surface was consistent with an individual between 45 to 49 years of age as it presented little to no macro pores.

Based on this assessment, Individual Sixteen is likely between 40 and 44 years of age. However, as this was the only method of age determination that could be completed a margin of error should be taken into account.

### ***5.9.3 Racial Affiliation***

#### ***5.9.3.1 Non-Metric Cranial and Dental Evaluation***

As the cranium was mainly disarticulated and deformed only several non-metric features could be assessed with any degree of accuracy. The lower border of the nasal aperture was moderately sharp. The orbits ranged from angular to rounded and the

browridges were relatively small. The cranium presented moderate to heavy muscle attachment areas and the mandible was relatively small. With only these very few characteristics available for examination, a definitive outcome based on the cranium cannot be delivered with any degree of accuracy.

Racial affiliation was determined by the presence or absence of shoveling on the lingual aspect of the maxillary incisors (Refer to Section 3.3.1.3). The incisors tested positive for this trait indicating Individual Sixteen was of First Nation's or Métis ancestry.

#### ***5.9.4 Sex Determination***

##### *5.9.4.1 Non-Metric Cranial Assessment*

The cranium exhibited a moderate degree of robusticity however, as few traits could be accurately examined, the innominate evaluation will form the basis of the sex determination for this individual.

##### *5.9.4.2 Innominate Evaluation*

Assessment of the pelvis produced results that Individual Sixteen was likely a male. However, due to poor preservation of the innominates only four of ten characteristics could be accurately examined. The ilia were high and arched, the greater sciatic notches were narrow, and the auricular surfaces were neither raised or demonstrated preauricular sulci.

#### ***5.9.5 Pathology and Developmental Variation***

##### *5.9.5.1 Discrete Traits*

A discussion of non-metric variation may be found in Section 5.6.5.1. Individual Sixteen presented several discrete traits including the presence of Wormian ossicles along the coronal suture, incomplete bridging of the right hypoglossal canal, and bilateral suprascapular notches. For a complete listing of these traits, refer to Appendix A, Table 5-4.

#### *5.9.5.2 Pathology*

Individual Sixteen presented moderate to heavy attrition on all teeth. Horizontal ridges on the anterior surface of the anterior dentition indicated the presence of enamel hypoplasia. A discussion on this pathological indicator may be found in Section 5.6.5.2.4. Caries were identifiable on the left maxillary second molar and first premolar, the right maxillary first molar, the left mandibular first molar, and the right mandibular first molar. Refer to Section 5.6.5.2.2 for a discussion on dental caries. The tibiae exhibited signs of periostitis on the proximal-lateral aspect of the diaphysis.

##### *5.9.5.2.1 Attrition*

Contact between the surfaces of opposing teeth due to the processes of mastication results in occlusal, incisal, and interproximal wear over time (Aufderheide and Rodriguez-Martin 1998). Diet can affect the severity, rate, and pattern of tooth wear particularly in societies that include a lot of raw grains and nuts in their diet. Attrition can aid in determining the age of the individual however, factors such as diet should be taken into account. Attrition resulting from mastication as opposed to bruxism or other forms of erosion or abrasion produce different wear patterns and should also be considered during age assessment. Although attrition itself is not considered a

pathological process, severe attrition exposing the soft dental tissues may result in infection of the dental or alveolar tissues.

#### 5.9.5.2.2 Periostitis



Figure 39. Periostitis of left tibia, Individual Sixteen

Periostitis is defined as the inflammation of the periosteum, a sheath of connective tissue that envelops the entire bone surface and contributes to bone growth and ligament and nerve attachment (Schwartz 1995). Periostitis may be due to a primary periostitic infection as a result of traumatic lesion to the bone or direct infection of the periosteum or the infection may be secondary in nature, resulting from the effects of another pathological agent (Schwartz 1995). This pathology presents as a region of eroded woven bone (Figure 40).

Patterns of generalized periostitis may be diagnostic of an infectious disease (secondary periostitic infection) such as syphilis. However, Individual Sixteen did not

present any other instances of periostitic reaction. It is possible that this infection is primary in nature or represents a soft tissue ailment affecting the tibiae.

### ***5.9.6 Individual Sixteen Osteological Summary***

Individual Sixteen was of First Nation's or Métis ancestry, likely male and between 40 and 44 years of age. The remains exhibited signs of poor health including dental wear and caries, enamel hypoplasia, and periostitic infection.

## **5.10 Grave Seventeen**

### ***5.10.1 Skeletal Description***

Grave Seventeen produced approximately 144 skeletal fragments and elements during excavation. The remains had been fairly disturbed due to topsoil removal and surface levelling. Extremely wet conditions during excavation resulted in complications during grave removal. Preservation of the remains ranged from poor to good. This individual exhibited the same unknown tibial deformity as Individual Twelve.

### ***5.10.2 Determined Age Range***

#### ***5.10.2.1 Non-Metric Analysis – Epiphyseal Appearance / Fusion***

The occipital bone was represented by four unfused elements. The length of the basioccipital portion of this bone was still greater in length than width. These features are consistent with an individual between birth and six months of age.

Impingement of the EAM and lengthening of the tympanic ring occur between the sixth post-natal month and the first year (Scheuer and Black 2000). These features in

addition to the prominent squamomastoid suture and patent subarcuate fossae suggest the individual was between six months and one year of age.

Patency of the metopic suture indicates that Individual Seventeen was younger than two years of age. The frontal bone is usually united between the second and fourth years (Scheuer and Black 2000).

The zygoma presented an exaggerated inferiorly notched border which intimated a perinatal age range for this individual (Scheuer and Black 2000). The morphology of the nasal conchae, palatines, and mandible were also consistent with a perinatal individual.

The vertebrae demonstrated no sign of posterior laminar or neurocentral fusion and the cervical transverse foramina had not yet completed their development. These stages of vertebral maturity indicate the individual was less than one year of age at time of death.

Development of the innominates and scapulae were consistent with an infant of less than one year of age.

#### *5.10.2.2 Odontological Age Range*

Only several formative teeth were recovered during excavation. The maxillary dentition was represented by the left incisors, right and left canines, and the right molar. The mandibular dentition was represented by the right second incisor and the right first and second molars. All teeth were deciduous in nature and had avulsed from the dental crypts. As such, it was difficult to produce an age estimate from the few tooth buds present. However, the appearance of the medial incisoral element indicated that it was

near eruption or had just completed the eruption process. This event usually occurs between the eighth and twelfth month (Scheuer and Black 2000).

#### *5.10.2.3 Individual Seventeen Age Summary*

Based on the non-metric and odontological assessments, it is likely that Individual Seventeen was approximately six months of age  $\pm$  6 months.

#### *5.10.3 Racial Affiliation*

Racial affiliation was determined by the presence or absence of shoveling on the lingual aspect of the maxillary incisors (Refer to Section 3.3.1.3). The incisors tested negative for this trait indicating Individual Seventeen was of Caucasian or European ancestry.

#### *5.10.4 Sex Determination*

Sex of the individual was evaluated based on the morphology of the ilium as the mandible was in a fragmentary state. The greater sciatic notch presented an acute angle and a deep curvature. The arch criterion did not demonstrate intersection and the iliac crest curvature exhibited a prominent 'S' shape. Each of these features is affiliated with the male gender.

#### *5.10.5 Pathology*

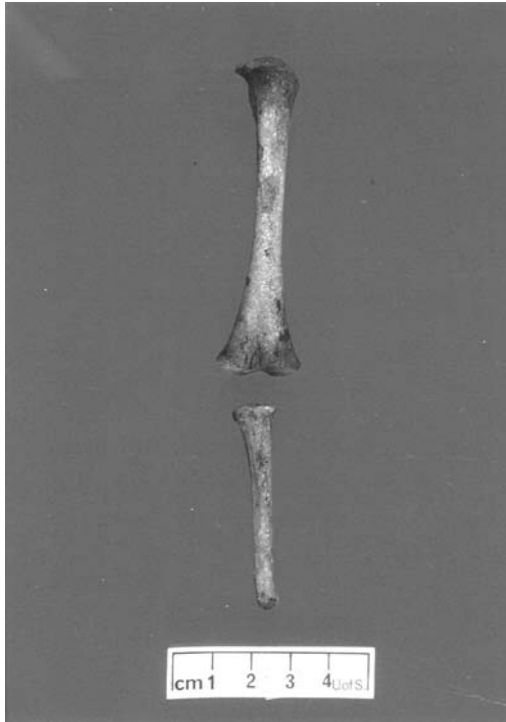


Figure 40. Left femur and pathological tibia from Individual Seventeen

Individual Seventeen demonstrated the same tibial pathology as Individual Twelve (Figures 34 and 41). Refer to Section 5.5.5 for a discussion on this anomaly. It is unclear as to whether or not this pathological feature was bilaterally represented as only the left tibia was recovered during excavation.

#### ***5.10.6 Individual Seventeen Osteological Summary***

Based on this osteological assessment, Individual Seventeen was a Caucasian male, approximately six months of age at time of death. This individual exhibited a tibial abnormality which could not be diagnosed to a particular pathological condition.



## 5.11 Grave Eighteen

### 5.11.1 Skeletal Description

Individual Eighteen (Figure 42) was represented by approximately 352 fragments and elements. Preservation of the remains was excellent allowing for a thorough



Figure 41. Grave Eighteen *in situ* (Courtesy Western Heritage Services Inc.)

osteological assessment to be conducted. Evidence of disease was prevalent along the dentition, the cranium, and the post-cranial remains.

### 5.11.2 Determined Age Range

#### 5.11.2.1 Non-Metric Analysis – Epiphyseal Appearance / Fusion

The squamous portion of the occipital bone was well-developed and had fused to the *pars lateralis*. This fusion occurs between years one and three (Scheuer and Black 2000). The exoccipital elements had not yet fused to the basioccipital. Fusion of these bony features does not begin to occur until age five (Scheuer and Black 2000).

The foramina of Huschke had completed their development and the mastoid processes were well into maturation suggesting that Individual Eighteen was between one and five years of age.

The frontal bone had fused to form a single unit. The metopic suture generally completes closure between the second and fourth year (Scheuer and Black 2000). However, Vu et al. (2001) propound that the suture may be closed as early as 3 months of age.

Adult morphology of the parietal bones and the maxilla is achieved by early childhood, as demonstrated in this individual. The zygoma had also attained an adult appearance, indicating Individual Seventeen was approximately two to three years old.

Appearance of the sphenoid intimated an age of approximately two years. The greater wings had fused to the body and the foramen ovale had completed development. Foramen spinosum had not yet achieved completion. The dorsum sellae was too fragmented for age assessment.

The superior border of nasal bones had become serrated and the vascular foramina were situated along the superior half of these elements suggesting the individual was approximately three years of age (Scheuer and Black 2000).

Ossification and fusion of the cribriform plate and the crista galli had occurred. This process is generally completed by age two (Scheuer and Black 2000).

Mandibular symphyseal fusion was complete rendering this element into a single unit. Completion of this process suggests that Individual Eighteen was at least one year old (Scheuer and Black 2000).

The body of the hyoid bone was identifiable in isolation indicating that the individual was approximately two years of age (Scheuer and Black 2000).

Vertebral morphology was consistent with an age between two and four years. Posterior laminar fusion was complete throughout the vertebral column. Neurocentral fusion was demonstrated in the lower aspect of the thoracic spine and in the entire lumbar spine. The transverse foramina were completed and the lumbar transverse processes were developing. The anterior bar of C1 was fully developed.

The innominate was represented by the three separate elements: the ilium, ischium, and pubis. The ilial acetabular surface was triangular in shape, but exhibited the development of non-articular bony plaque. The presence of this calculus suggests that the individual was nearing the four year mark (Scheuer and Black 2000). Clear definition of the ischial and ilial articular sites on the pubis is indicative of the same age range as determined in the ilial assessment. Ischial morphology was consistent with an individual older than one year of age.

As the coracoid process was recognizable as a separate centre of ossification, the age of the individual based on the scapular assessment is approximately three years (Scheuer and Black 2000).

Each of the long elements with the exception of the femora and the tibiae were represented by the shaft only. As such, a limited assessment of these bones would have resulted in an understated age for the individual involved. The proximal epiphysis of the femur was comparable to that of a three year old male. The proximal epiphysis of the tibia was too eroded for a detailed morphological analysis, but based on size it was comparable to that of a three year old.

#### *5.11.2.2 Odontological Age Range*



Figure 42. Right Maxillary Dentition of Individual Eighteen

Individual Eighteen presented a fully emerged deciduous dentition with evidence of the adult dentition developing below (Figure 43). However, the maxillary incisoral roots had not yet completed their development. Radiographic evidence demonstrated the maxillary adult incisors, canines, premolars and first molars developing beneath the deciduous dentition. The radiograph did not cover the posterior-most aspect of the maxilla and as such, the development of the second adult molar could not be assessed. The mandibular radiograph verified the growth of the adult canines and premolars beneath the deciduous dentition. However, the second premolar was not evident upon examination. Based on the odontological assessment, Individual Eighteen was between three and four years of age.

#### *5.11.2.3 Metric Analysis –Maximum Diaphyseal Length*

Maximum diaphyseal length was measured for each complete element. Results were then compared to tabular data compiled by Scheuer and Black (2000). Measurements were taken from the clavicles, right ulna, left radius, and the right tibia. Based on the lengths of these elements, the mean age of the individual is 3.5 years.

#### *5.11.2.4 Individual Eighteen Age Summary*

Based on the non-metric, odontological, and metric age values derived from the osteological examination, Individual Eighteen was approximately 3 years of age + / - 6 months.

#### *5.11.3 Racial Affiliation*

Racial affiliation was determined by the presence or absence of shoveling on the lingual aspect of the maxillary incisors (Refer to Section 3.3.1.3). Due to poor odontological health, this trait could not be accurately assessed on this individual. As such the racial affiliation of Individual Eighteen remains undetermined.

#### *5.11.4 Sex Determination*

Decompositional erosion of the ilia inhibited an accurate evaluation of these elements. The mandible presented several characteristics consistent with a male individual including an angular symphyseal base, an everted gonion region, and a wide angular mental protrusion. However, the remaining features were indeterminate. Consequentially, the sex of the individual could not be ascertained with any degree of certainty.

#### *5.11.5 Pathology*



Figure 43. Maxillary dentition of Individual Eighteen. Note numerous dental caries.

An auditory exostosis was present within the external auditory meatus of the right temporal bone (Figure 45). This condition likely would have affected the child's hearing in that ear. A small osseous spur was identifiable on the anterior portion of the right tympanic plate. The foramina of Huschke were patent bilaterally, which is not uncommon for an individual of this age as the foramina may have close until approximately five years of age. Perhaps the most conspicuous pathological anomalies were present of the dentition, which was riddled with major carious lesions (Figure 44). Large pitted lesions were present, exposing a great amount of dentin and in several cases, the pulp chamber. Major caries were present on every deciduous tooth except the right maxillary canine and the mandibular incisors and canines. A discussion on dental caries may be found in section 5.6.5.2.2. Lytic defects were also present within one of the sacral elements.

#### 5.11.5.1 Auditory Exostosis

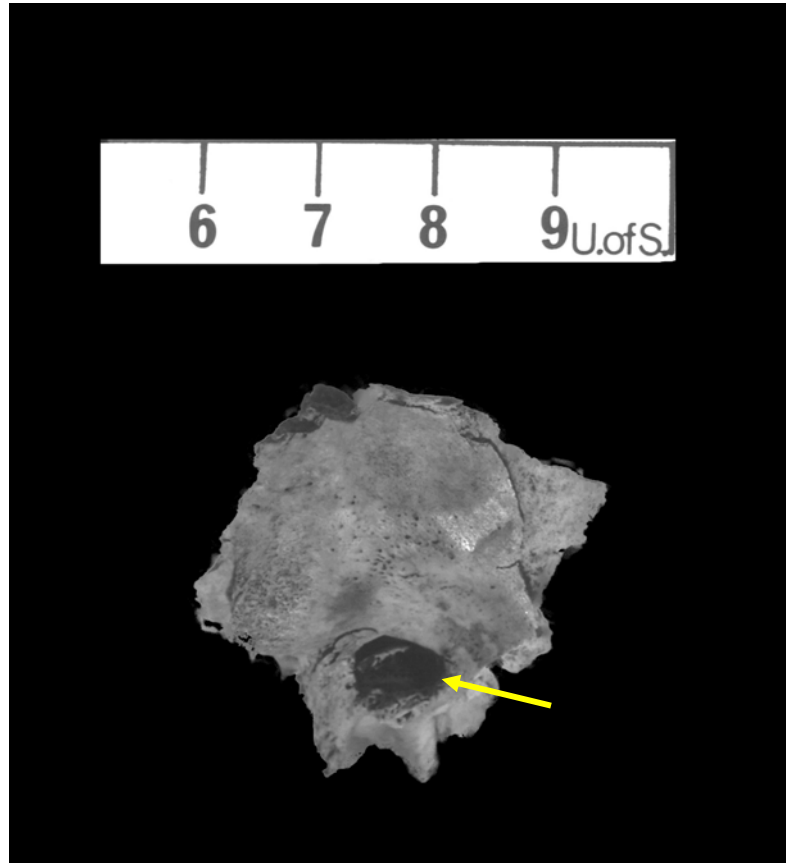


Figure 44. Auditory exostosis of the right temporal bone of Individual Eighteen

Auditory exostoses (Figure 45) are defined as benign bony lesions within in the ear canal that during life are surrounded by soft tissue (Aufderheide and Rodriguez-Martin 1998). The etiology of these lesions remains unclear although numerous causative agents such as cold water and mastication stress have been purported (Aufderheide and Rodriguez-Marin 1998). The cause remains inconclusive. However, Aufderheide and Rodriguez- Martin (1998) note that this condition presents a very high male to female ratio, suggesting this individual may be male. Of particular note, they mention that auditory exostoses are rarely if ever found in persons under the age of twenty indicating that this particular case is unique due to the very young age of

individual. As this condition is usually presented in adults, Aufderheide and Rodriguez-Martin (1998) propose that this is an acquired condition, and not due to genetic disposition. The excessive carious nature of the dentition and the presence of lytic lesions on the sacral elements would seem to be in agreement with this hypothesis. Therefore, it is plausible that these pathological factors may be due to the presence of disease, infection, or another form of health-related stress. Further examination of this pathological feature is warranted.

#### ***5.11.6 Individual Eighteen Osteological Summary***

Individual Eighteen was approximately 3 years of age + / - 6 months and demonstrated abundant evidence of poor health. The presence of an auditory exostosis suggests the individual may have been male, although the osteological assessment of the mandible was inconclusive. Racial affiliation could not be determined for this individual.

### **5.12 Grave Nineteen**



Figure 45. Grave Nineteen *in situ* (Courtesy Western Heritage Services Inc.)

#### ***5.12.1 Skeletal Description***



Approximately 229 fragments and elements were recovered during the exhumation of this grave. Preservation of the remains ranged from good to excellent allowing for in-depth osteological analysis. The lower portion of the legs including the feet had been sheared off by construction activities. This portion of the remains was never recovered.

#### ***5.12.2 Determined Age Range***

Three methods of age determination were used to assess the age of Individual Nineteen (Figure 46). The pubic symphysis, sternal rib ends, and auricular surface of the ilia were examined and evaluated based on their appearance, porosity, osteoclastic or osteogenetic activity. As the skeleton is developmentally complete as an adult, these forms of age determination examine how bone ages, degenerates and changes throughout the mature life of an individual.

##### ***5.12.2.1 Pubic Symphyseal Surface***

The pubic symphyseal surfaces were compared and evaluated against tabular and pictorial data published by Byers (2005) summarized from Meindl et al. (1985) and Krogman (1962) and by White (2000) based on Todd's (1920) original research. The criteria are based on the appearance of the face, margins and extremities of the symphyseal surface.

The pubic symphysis of Individual Nineteen presented morphological characteristics consistent with that of an individual between 25 to 29 years of age. The pubic surface demonstrated the reduction of the bony ridges and furrows affiliated with

bone development. The rest of the pubic surface had decomposed thus preventing an accurate diagnosis.

#### *5.12.2.2 Auricular Surface*

Auricular surface morphology indicated Individual Nineteen was approximately fifty years of age. The surface organization was irregular in nature and presented a dense granulous appearance. The retroauricular and apical surfaces were moderate to marked with osteophytic activity. Macrous porosity was present along the entire auricular surface.

#### *5.12.2.3 Sternal Rib Ends*

Osteophytic activity was also present along the sternal rib ends, producing irregular rim contours. The surfaces of the sternal ends were smooth to porous, presented sharp rim margins, and flared U-shaped surface contours. As a result, the sternal rib end assessment indicated that Individual Nineteen was approximately 40 years old.

#### *5.12.2.4 Individual Nineteen Age Summary*

Based on the auricular surface, sternal rib end, and pubic symphyseal morphology osteological examination, Individual Nineteen was between 40 and 50 years of age at time of death. The early age proposed by the pubic symphyseal assessment may have been due to the degraded nature of the bone and was not included in the final age results.

### ***5.12.3 Racial Affiliation***

Attribution of ancestry was predominantly based on the dentition as the cranium, particularly the facial aspect, was in a fairly fragmented state. A metric assessment could not be completed due to the incomplete nature of the remains.

#### ***5.12.3.1 Non-Metric Cranial and Dental Evaluation***

As the cranium was mainly disarticulated and deformed only several non-metric features could be assessed with any degree of accuracy. The orbits ranged from angular to rounded and the browridges were relatively small. The cranium presented moderate to heavy muscle attachment areas and the mandible was relatively small. With only these very few characteristics available for examination, a definitive outcome based on the cranium cannot be delivered with any degree of accuracy.

Racial affiliation was determined by the presence or absence of shoveling on the lingual aspect of the maxillary incisors (Refer to Section 3.3.1.3). The incisors tested positive for this trait indicating Individual Nineteen was of First Nation's or Métis ancestry.

### ***5.12.4 Sex Determination***

Sex was assigned to Individual Nineteen based on the non-metric aspects of the cranium and innominates. A metric assessment could not be performed based on the incomplete nature of the skull.

#### *5.12.4.1 Non-Metric Cranial Assessment*

Only five out of twelve features could be evaluated due to the incompleteness of the cranium. The skull demonstrated a nominal degree of robusticity overall. The superciliary eminence exhibited a gracile level of robusticity normally apparent in females. The forehead shape was vertical in nature and the occipital crest was slight suggesting a female person. Moderate rounding of the supraorbital margin produced indefinite results. Abrupt projection of the mental eminence as demonstrated in Individual Nineteen is more commonly exhibited in males.

#### *5.12.4.2 Innominate Evaluation*

Ten anthroposcopic traits were examined: ilial shape, shape and depth of the greater sciatic notch, presence of a preauricular sulcus, subpubic angle, shape of the pubis, presence of scars of parturition, shape of inferior ramus, beveling of subpubic ramus, auricular platforming, and the shape of the obturator foramen. Each trait clearly presented positive female attributes with the exception of the absence of scars of parturition, which is an inconsistent trait.

#### *5.12.4.3 Sex Determination Summary*

The cranial assessment was minimal due to the lack of intact skeletal elements. As such, the outcome was primarily based on the pelvic traits which unanimously dictated that Individual Nineteen was female.

#### ***5.12.5 Developmental Variation***

A discussion of non-metric variation may be found in Section 5.6.5.1. Individual Nineteen presented several discrete traits including the presence of bilateral septal apertures of the olecranon fossae and a tibial squatting facet on the right side. For a complete listing of these traits, refer to Appendix A, Table 5-4.

No pathological features were observable in Individual Nineteen.

#### ***5.12.6 Individual Nineteen Osteological Summary***

Individual Nineteen was a forty or fifty year old female of First Nation or Métis ancestry. No observable pathological features were recorded.

### **5.13 Grave Twenty**

Grave Twenty contained two individuals in a stacked interment style. Each individual was swaddled and separated by a great deal of purple fabric. This placement is feasibly indicative of a familial relationship between the two individuals. The second individual found, Individual Twenty B, was discovered by the uncovering of a third petrous bone. Each individual will be considered separately.

### 5.13.1 Individual Twenty A



Figure 46. Grave Twenty Individual A cranium *in situ* (Courtesy Western Heritage Services Inc.)

#### 5.13.1.1 Skeletal Description

Grave Twenty A (Figure 47) contained approximately 229 fragments and elements. Preservation of the remains was excellent allowing for some of the very fine and fragile cranial elements to remain intact. The sex of this individual could not be determined due to incompleteness of the mandibular and ilial elements.

#### 5.13.1.2 Determined Age Range

##### 5.13.1.2.1 Non-Metric Analysis – Epiphyseal Appearance / Fusion

The lack of fusion between the occipital *pars basilaris* and *partes lateralis* in addition to the incompleteness of the hypoglossal canal formation suggested that Individual Twenty A was a neonate at time of death (Scheuer and Black 2000).

Morphological development of the temporal bone had progressed to a stage consistent with that of an infant of approximately six months of age. The petrous portion had fused to the squamous forming a nearly completed single unit. The subarcuate fossa

was large and round although the foramen of Huschke had not begun formation.

Identifiable in isolation, the tympanic ring was open posteriorly, and non-circular in appearance.

Patency of the metopic suture suggested that Individual Twenty A was between birth and one year of age (Scheuer and Black 2000). Morphology of the zygomae and maxillae were also consistent with an individual in early infancy.

The sphenoid bone was represented by the body and the greater wing elements which had not yet conjoined to form a single unit. This fusion generally occurs during the first year (Scheuer and Black 2000).

The ethmoid, vomer and nasal conchae had reached stages of development consistent with that of a neonatal individual. The inferior nasal conchae had attained an adult morphology and the vomer had formed into a single bone comprised of two fused laminae. The ethmoid was represented by two bony labyrinths.

Still comprised of two discrete halves, the appearance of the mandible suggested that Individual Twenty A was a neonate at time of death. The mandibular symphysis is united during the first postnatal year of life (Scheuer and Black 2000).

Neurocentral and posterior laminar fusion of the vertebrae had not commenced in this individual. The *os dens* had formed into a single unit. These features intimate an age range between birth and one year.

The scapula was represented by the body only as the coracoid had not commenced ossification prior to the death of the individual. The coracoid process commences its bony development during the first year (Scheuer and Black 2000).

Each of the long limb elements, with the exception of the femur, consisted of the diaphyseal elements only. The epiphyses had either had not commenced ossification,

were subject to decomposition or were overlooked during excavation. A lack of ossification would suggest the individual was within a neonatal age range. The femur was represented by a small, bead-like head and shaft but the distal epiphysis was not recovered. Formation of the femoral head and its identification in isolation suggests the individual was approximately one year of age.

#### *5.13.1.2.2 Odontological Age Range*

Each deciduous tooth was recovered from Individual Twenty A during excavation with the exception of the right mandibular second incisor. Each tooth consisted of an unerupted developing crown. The first deciduous teeth to emerge from their crypts are the first mandibular incisors which erupt between the sixth and tenth month. It is therefore plausible to assume that Individual Twenty A was less than ten months of age at time of death. Note that the maxillary incisors and canines demonstrated a notable degree of crowding.

#### *5.13.1.2.3 Metric Analysis – Maximum Diaphyseal Length*

Measurements of the left humerus, ulna and femur were taken to substantiate the age assessment. Using both maximum diaphyseal lengths and distal epiphyseal widths, the measurements were compared to tabular data compiled by Scheuer and Black (2000). Based on this data, Individual Twenty A was approximately 40 foetal weeks or full term at the time of death.



#### *5.13.1.2.4 Individual Twenty A Age Summary*

Based on data compiled from the non-metric, metric and odontological age assessments, Individual Twenty A was a neonate at time of death. Given the age of the individual, it is possible that this new born infant may have been subject to complications during childbirth.

#### *5.13.1.3 Racial Affiliation*

Ancestry was determined by the presence or absence of shoveling on the lingual aspect of the maxillary incisors (Refer to Section 3.3.1.3). The incisors tested positive for this trait indicating Individual Twenty A was of First Nation or Aboriginal mixed ancestry.

#### *5.13.1.4 Individual Twenty A Osteological Summary*

Individual Twenty A was a neonate of First Nation's or mixed Aboriginal ancestry. The sex of the individual could not be determined. No evidence of pathology or trauma was observed during the osteological investigation.

### **5.13.2 Individual Twenty B**



Figure 47. Grave 20 Individual Twenty B *in situ*. Note the abundance of purple cloth. (Courtesy Western Heritage Services Inc.)

#### ***5.13.2.1 Skeletal Description***

Approximately 132 skeletal elements and fragments were recovered during the excavation of Individual Twenty B (Figure 48). Preservation of the remains was very good allowing for recovery of a majority of the elements and for the preservation of some soft tissue and hair samples to be collected. However, metric analysis could not be performed as the long bone diaphyses had not remained intact.

#### ***5.13.2.2 Determined Age Range***

##### ***5.13.2.2.1 Non-Metric Analysis – Epiphyseal Appearance / Fusion***

The occipital bone of Individual Twenty B (Figure 22) was represented by the *pars basilaris* only and no fusion between this element and the *partes laterales* had taken place. The width of the basioccipital was greater than its length. These features suggest that the individual was equal or greater to six months of age.

Narrowing of the external auditory meatus, the small size of the subarcuate fossae, and the fusion of the petromastoid and squamotympanic elements of the temporal bone indicate that Individual Twenty B was approximately one year of age (Scheuer and Black 2000).

Fusion of the metopic suture had recently begun, although the frontal bone was still present as two separate entities. Closure of the metopic suture generally commences during the first year and is often complete by the second year (Scheuer and Black 2000). This fusion schedule propounds an age between one and two years for this individual.

The maxillae were fully formed. However, an incisive suture was prominently displayed on the palatal surface of the bone. The Latin term for this remnant landmark, *sutura notha* meaning the illegitimate or bastard suture, give some indication of the disagreement regarding the ossification pattern of the maxilla and the existence of a separate premaxillary center of ossification (Scheuer and Black 2000). It is still unclear as to whether the premaxilla develops as a separate center of ossification which is fused at the incisive suture during development or if the maxillary elements are formed whole and a network of overlaying bone growth obliterates this feature (Scheuer and Black 2000). In this case, the incisive suture is termed a fissure (Scheuer and Black 2000).

Morphology of the sphenoid indicated the individual was approximately one year of age. The greater wings had fused to the body, the *dorsum sellae* had ossified, the foramina ovale were complete albeit slightly impinged and the foramina spinosum were still incomplete.

The only cervical vertebra recovered (C7) had demonstrated neurocentral fusion, but posterior lamellar fusion had not yet occurred. The thoracic and lumbar vertebrae demonstrated posterior fusion of the lamellae, but neurocentral fusion had not occurred in this individual. These features suggest that the individual had died during the first year of postnatal development.

Retained as three separate elements, the appearance of the innominate was consistent with that of an individual between six months and one year of age. The acetabular surface was rounded and smooth with an elevated surface in the centre of the forming articular areas. The ischial spine was not evident at this stage of development.

No epiphyses were recovered from any of the long bone elements. Metric assessment of these bones was not possible due to incompleteness.

#### *5.13.2.2.2 Odontological Age Range*

The deciduous dentition was incomplete and had avulsed from the alveolus. Crowns from the adult dentition at early stages of development were also recovered from this individual. Based on the appearance of the crown, the deciduous maxillary incisors had erupted. Apical closure had not occurred in either of these teeth. The second maxillary and mandibular molars had not yet erupted, nor had the first mandibular molars. Based on this eruption pattern, it is likely that Individual Twenty B is between six months and one year of age.

#### *5.13.2.2.3 Individual Twenty B Age Summary*

The non-metric and odontological examinations of Individual Twenty B intimate an age at death between six months and one year of age. It is likely that the age of the individual leans towards the later end of the spectrum given the stage of development of some of the more major elements such as the sphenoid bone.

#### *5.13.2.3 Racial Affiliation*

Ancestry was determined by the presence or absence of shoveling on the lingual aspect of the maxillary incisors (Refer to Section 3.3.1.3). The incisors tested positive for this trait indicating Individual Twenty B was of First Nation or Aboriginal mixed ancestry.

#### ***5.13.2.4 Individual Twenty B Osteological Summary***

Individual Twenty B was an infant of First Nation or mixed Aboriginal ancestry approximately one year of age. The sex of the individual could not be determined. No evidence of pathology or trauma was observed during the osteological investigation.

### **5.14 Grave Twenty-One**



Figure 48. Individual Twenty-One *in situ*. Note inferior disturbance of grave (right).  
(Courtesy Western Heritage Services Inc.)

#### ***5.14.1 Skeletal Description***

The grave of Individual Twenty-One (Figure 49) had been previously disturbed, likely due to construction activity. Approximately 223 fragments and elements were recovered during excavation. Despite the disturbance, the remains were relatively well preserved albeit fragmented allowing for in-depth analysis. Sex of the individual was not possible to accurately assess for this individual.

#### ***5.14.2 Determined Age Range***

##### ***5.14.2.1 Non-Metric Analysis – Epiphyseal Appearance / Fusion***

It was unclear as to whether the *partes laterales* and the squamous portion had united although it was evident that the *laterales* and the *pars basilaris* had not yet fused. Fusion between these elements occurs between the first and third and the fifth and seventh years, respectively (Scheuer and Black 2000). The perimeter of the right hypoglossal canal was nearly complete and was complete in the left canal which also demonstrated evidence of bifurcation. The hypoglossal canal completes development in the *partes laterales* between the second and fourth years (Scheuer and Black 2000). The above features indicate that Individual Twenty-One may have been anywhere between two and four years of age.

Fusion between the petromastoid and squamotympanic elements had occurred resulting in the near obliteration of the squamomastoid suture which was only present as a faint ridge. This development occurs during the first year (Scheuer and Black 2000). The tympanic ring had lengthened and was open posteriorly. Based on the temporal morphology, Individual Twenty-One was between six postnatal months and one year of age.

The frontal bone remained as two discrete entities, the metopic suture having failed to fuse prior to death. This suggests the individual was likely less than two years of age.

Sphenoidal development was consistent with an individual between birth and one year of age. The greater wings had not yet fused to the body and foramen ovale was complete on the left greater wing, but incomplete on the right greater wing.

Represented by two separate halves, mandibular morphology indicated that the individual was less than one year of age.

The vertebral column demonstrated no evidence of neurocentral or posterior laminar fusion. The *os dens* (C2) was present as a single unit. The lack of union between these elements suggests the individual was a neonate or very young infant at the time of death.

The innominates were represented by the ilia, ischia, and pubii as discrete entities. The ilial acetabular surface was rounded and elliptical with a neonatal appearance. The ischial surfaces were fairly eroded but were seemingly neonatal. General morphology of the pubis is also indicative of a neonatal age.

The clavicles, humerii, radii, ulnae, tibiae and fibulae were represented by the diaphyseal elements only, thereby suggestive of a neonatal age range. The scapulae consisted of the body only, the coracoid not having yet formed. A very small proximal epiphysis was recovered from the right femur. These two bones suggest Individual Twenty-One was less than one year of age. Note that the lack of epiphyseal elements may be due to grave disturbance, decomposition, or excavator error.

#### *5.14.2.2 Odontological Age Range*

The deciduous dentition was incompletely represented, had avulsed from the crypts and primarily consisted of developing crowns. The maxillary incisors demonstrated evidence of slight root formation and may have just begun to erupt prior to death. When compared to tabular data published by Scheuer and Black (2000), odontological morphology of Individual Twenty-One is consistent with that of an individual of approximately 6 months of age +/- 3 months.

#### *5.14.2.3 Metric Analysis – Maximum Diaphyseal Length*

Maximum diaphyseal length was measured for each complete element. Results were then compared to tabular data compiled by Scheuer and Black (2000). Measurements were taken from the right and left femora and the right tibia. Based on the lengths of these elements, the mean age of the individual is 2.6 postnatal months.

#### *5.14.2.4 Individual Twenty-One Age Summary*

Based on the non-metric, metric, and odontological assessments, Individual Twenty-One was approximately 6 months of age +/- 6 months. This somewhat large margin of error is due to the discrepancy between the non-metric and odontological / metric data.

#### *5.14.3 Racial Affiliation*

Ancestry was determined by the presence or absence of shoveling on the lingual aspect of the maxillary incisors (Refer to Section 3.3.1.3). The incisors tested positive for this trait indicating Individual Twenty-One was of First Nation or Aboriginal mixed ancestry.

#### *5.14.4 Pathology*

The left femur exhibited a large elliptical cloaca on the posterior mid-shaft surface (Figure 50). No sequestrum was evident upon radiographic analysis. The presence of a cloaca is symptomatic of osteomyelitis, an inflammation of the bone and





Figure 49. Osteomyelitis of left femur, Individual Twenty-One

bone marrow tissues caused by suppurative bacteria. Acute hematogenous osteomyelitis is the diffusion of osteomyelitic bacteria through the bloodstream (Aufderheide and Rodriguez-Martin 1998). This type of infection is highest in infants under two years of age, when skeletal growth is most active (Aufderheide and Rodriguez-Martin 1998). The *Streptococcus* bacterium is predominantly responsible for the hematogenous osteomyelitic infection of infants (rather than the *Staphylococcus* strain) (Aufderheide and Rodriguez-Martin 1998). In its acute form, sequestrums are uncommonly formed, as seen here.

There was no evidence of skeletal traumatic injury in this individual therefore; it is unlikely that the lytic defect exhibited here was the result of a direct infection. Rather, it was more likely the result of a primary infective agent. No evidence of healing was observed.

#### ***5.14.5 Individual Twenty-One Osteological Summary***

Individual Twenty-One was approximately 6 months of age +/- 6 months and of First Nation or mixed Aboriginal ancestry. The sex of the individual could not be determined. Osteomyelitic infection was presented on the left femur suggesting this young person died as the result of a major infective agent that had entered the bloodstream affecting the skeletal system.

### **5.15 Grave Twenty-Two**



Figure 50. Individual Twenty-Two *in situ*. (Courtesy Western Heritage Services Inc.)

#### ***5.15.1 Skeletal Description***

Approximately 161 elements and fragments were recovered from Grave Twenty-Two (Figure 51) during exhumation. Bone preservation ranged from poor to very poor as smaller elements were recovered but much of the bone was in a very fragmented or decomposed state. Due to the poor preservation of the innominate and complete decomposition of the mandibular elements, sex determination of this individual could not be performed with a reasonable degree of accuracy. Much of the skeleton was subject to severe or complete decomposition.

### ***5.15.2 Determined Age Range***

#### *5.15.2.1 Non-Metric Analysis – Epiphyseal Appearance / Fusion*

The petromastoid and squamotympanic elements of the temporal bone had fused together and the tympanic ring had lengthened suggesting the individual was less than one year of age.

One thoracic vertebra demonstrated posterior fusion of the neural arch while the remaining elements did not. No lumbar or sacral vertebrae demonstrated any evidence of posterior fusion. Neurocentral fusion had not occurred in any of the vertebral elements. Based on the vertebral spine, Individual Twenty-Two was less than one year old.

The innominate was represented by the three discrete elements. The acetabular surface of the ilium was very triangular in shape while the articular surface of the ischium was broad in nature. Each of these characteristics suggests the individual was approximately six months of age.

Epiphyses of the femur and possibly the tibia were present but they were not identifiable in isolation. However, the presence of these centres of ossification and their morphology suggests that the individual was less than one year of age.

#### *5.15.2.2 Odontological Age Range*

The dentition was represented by the deciduous teeth only. All teeth had avulsed from the tooth crypts and were in formative crown development stages. The appearance of the incisors suggested they had just begun or were about to begin eruption placing the age at death at approximately six months of age.

#### *5.15.2.3 Metric Analysis – Maximum Diaphyseal Length*

Maximum diaphyseal length was measured for each complete element. Results were then compared to tabular data compiled by Scheuer and Black (2000). Measurements were taken from the right and left femora. Based on the lengths of these elements, the age of the individual was approximately three postnatal months.

#### *5.15.2.4 Individual Twenty-Two Age Summary*

Data compiled from the non-metric, metric and odontological assessments indicates that Individual Twenty-Two was between 3 and 6 months of age at time of death.

#### *5.15.3 Racial Affiliation*

Ancestry was determined by the presence or absence of shoveling on the lingual aspect of the maxillary incisors (Refer to Section 3.3.1.3). The incisors tested positive for this trait indicating Individual Twenty-Two was of First Nation or Aboriginal mixed ancestry.

#### *5.15.4 Pathology*

Three of the metacarpals exhibited small lytic lesions on the surface of the bone. An etiology for these pathological anomalies could not be determined.

#### *5.15.4 Individual Twenty-Two Osteological Summary*

Individual Twenty-Two was of First Nation's or mixed Aboriginal ancestry and between three and six months of age at time of death. Sex of the individual could not be

determined. Small lesions were present on the hands of this person however; the cause could not be identified.

## **5.16 Grave Twenty-Three**

### ***5.16.1 Skeletal Description***

Grave Twenty-Three produced approximately 125 elements and fragments during excavation. Bone preservation was poor. This may have been due to the young age of the individual. With the exception of a clavicular fragment, several rib fragments, and three vertebral centra, the post-cranial remains had completely decomposed. As such, metric analysis and sex determination could not be completed.

### ***5.16.2 Determined Age Range***

#### ***5.16.2.1 Non-Metric Analysis – Epiphyseal Appearance / Fusion***

The petrous portion of the temporal bone was consistent in appearance with that of a seven month foetus. The tympanic rings were still separate from the body of the bone and were identifiable in isolation indicating an age greater than three foetal months (Scheuer and Black 2000).

Not yet united to form a single unit, the frontal bones appeared to have completed their initial morphological development suggesting the foetus was near term at time of death (Scheuer and Black 2000).

The zygomae were slender and triradiate in their appearance with a notched inferior border. These characteristics suggest the individual was perinatal in age (Scheuer and Black 2000).

Fusion between the sphenoidal body and the lesser wings was complete however the greater wings remained as separate entities of ossification. Subsequently, it is likely that the individual had reached a perinatal stage of development prior to death.

The vomer consisted of a single, boat-shaped bone while the inferior nasal conchae demonstrated early maturation of the ethmoidal and lacrimal processes. These nasal features suggest the individual was between 8 foetal months and birth (Scheuer and Black 2000).

An adult morphology was exhibited in the palatine bones indicating the individual was at the very least perinatal in age (Scheuer and Black 2000).

Three vertebral centra were recovered from Individual Twenty-Three. They were small, somewhat billowed, and cleft in appearance. A precise age range could not be determined from these elements; however it is clear that they are at an early foetal stage in their development.

The clavicle was incomplete but adult in its appearance indicating the individual had attained an age near birth (Scheuer and Black 2000).

#### *5.16.2.2 Odontological Age Range*

The teeth were represented by developing unerupted tooth buds only. Identifiable in isolation, only the right maxillary first incisor, left and right maxillary second incisors, right mandibular first and second incisors were present. The appearance of the incisors suggested the individual was a full term foetus +/- 2 months.

#### *5.16.2.3 Individual Twenty-Three Age Summary*

Odontological and non-metric osteological assessment of the remains indicated that Individual Twenty-Three had reached a perinatal stage of development prior to death.

#### ***5.16.3 Racial Affiliation***

Ancestry was determined by the presence or absence of shoveling on the lingual aspect of the maxillary incisors (Refer to Section 3.3.1.3). The developing incisors tested negative for this trait indicating Individual Twenty-Three was of Caucasian ancestry.

#### ***5.16.4 Individual Twenty-Three Osteological Summary***

Individual Twenty-Three was a neonate or late foetus of Caucasoid ancestry. Sex of the individual could not be determined. No evidence of pathology was observed. The very young age of this individual suggests death may have been due to complications during childbirth or late pregnancy.

### **5.17 Grave Twenty-Four**



Figure 51. Individual Twenty-Four *in situ*. (Courtesy Western Heritage Services Inc.)

### ***5.17.1 Skeletal Description***

Upon exhumation, Grave Twenty-Four (Figure 52) contained approximately 221 elements and fragments. Preservation of the remains was excellent as the bone was in good condition and nearly the entire skeleton was accounted for.

### ***5.17.2 Determined Age Range***

Two methods of age determination were used to assess the age of Individual Twenty-Four. The sternal rib ends and the auricular surface of the ilia were examined and evaluated based on their appearance, porosity, osteoclastic or osteogenetic activity. As the skeleton is developmentally complete as an adult, these forms of age determination examine how bone ages, degenerates and changes throughout the mature life of an individual. The pubis and part of the ischium had completely decomposed preventing a pubic symphyseal assessment.

#### ***5.17.2.1 Auricular Surface***

Auricular surface morphology indicated Individual Nineteen was approximately forty years of age +/- 5 years. The transverse organization presented no billows and only vague striae were observed. The retroauricular and apical surfaces were slight to moderately marked with osteophytic activity. Little macrous porosity was present along the entire auricular surface. The auricular surface was distinctly coarse grained.

#### ***5.17.2.2 Sternal Rib Ends***

Osteophytic activity was also present along the sternal rib ends, producing irregular rim contours. The surfaces of the sternal ends were porous, presented sharp rim



margins, and flared U-shaped surface contours. As a result, the sternal rib end assessment indicated that Individual Twenty-Four was approximately 40 years old.

#### *5.17.2.3 Individual Twenty-Four Age Summary*

Based on osteological changes to the sterna rib ends and the auricular surface of the ilium, Individual Twenty-Four was forty years of age +/- 5 years. Assessment of the pubic symphyseal surface may have decreased this margin of error.

### **5.17.3 Racial Affiliation**

#### *5.17.3.1 Non-Metric Cranial and Dental Evaluation*

Individual Twenty-Four presented nearly textbook Caucasian cranial characteristics. The nose exhibited a high and narrow root, a high bridge, a pronounced nasal spine, a sharp and silled lower nasal aperture border, and was narrow in width. The face was narrow in width and presented a straight profile. The orbits were angular and receding. Overall, the cranial sutures were simple in appearance with no inclusion of intersutural ossicles. The region posterior to bregma was straight. The mandible was comparatively small in size and the palate was hyperbolic in shape. Each of these cranial features is generally attributed to individuals of Caucasian ancestry. Only two of the examined features did not correlate. The browridges were relatively small in size and the muscle attachment sites were neither robust nor gracile. These features usually correspond to individuals of a Black or Asian ancestral background.

Ancestry was also determined by the presence or absence of shoveling on the lingual aspect of the maxillary incisors (Refer to Section 3.3.1.3). The incisors tested negative for this trait indicating Individual Twenty-Four was of Caucasian ancestry.

### 5.17.3.2 Metric Cranial Evaluation

Discriminant function analysis was performed based on cranial measurements taken from Individual Twenty-Four. Data compiled by Byers (2005) presents the following formula utilized to differentiate female whites versus female Native Americans:

$$\begin{aligned} &3.05 (\text{BaPr}) - 1.04 (\text{ML}) - 5.41 (\text{MB}) + 4.29 (\text{BaBr}) - 4.02 (\text{BaNa}) + 5.62 (\text{BB}) \\ &- 1.00 (\text{PrNa}) - 2.19 (\text{NB}) \end{aligned} \quad (5.6)$$

In this equation, the variants are abbreviations for specific cranial measurements (in millimeters) based on bony landmarks of the skull. BaPr represents the value for the distance between basion and prosthion. ML and MB represent the values for maximum cranial length and cranial width, respectively. BaBr is the distance between basion and bregma while BaNa is the distance between basion and nasion. Bizygomatic breadth, or BB, is the distance between the most lateral aspects of the zygomatic bones. PrNa, sometimes referred to as upper facial height, represents the distance between prosthion and nasion. Lastly, NB represents the width of the nasal aperture or nasal breadth.

As such, the values for Individual Twenty-Four may be represented as follows:

$$\begin{aligned} &= 3.05 (91) - 1.04 (178) - 5.41 (135) + 4.29 (130) - 4.02 (98) + 5.62 (115) \\ &- 1.00 (73) - 2.19 (21) \end{aligned} \quad (5.7)$$

$$= 277.55 - 185.12 - 730.35 + 557.7 - 393.96 + 646.3 - 73.0 - 45.99 \quad (5.8)$$

= 53.13

When compared to the sectioning point of 130.10 (Byers 2005), the discriminant function of 53.13 for this individual falls far below. This indicates that Individual Twenty-Four was of Caucasian descent. Discriminant function analysis was not performed for other racial groups based on the results of the non-metric examination and the ancestral composition of the historic population surrounding Prince Albert during the usage of the Forest Centre cemetery.

#### *5.17.3.3 Individual Twenty-Four Ancestral Summary*

The outcome of the non-metric racial assessment was bolstered by the metric evaluation supporting the conclusion that Individual Twenty-Four was of Caucasian descent.

#### *5.17.4 Sex Determination*

Sex was assigned to Individual Twenty-Four based on the non-metric aspects of the cranium and innominates and a metric assessment of the cranium. All measurements will be placed in Appendix A in Tables 5-3 and 5-4.

##### *5.17.4.1 Non-Metric Cranial Assessment*

Twelve sexually dimorphic features were evaluated. The skull demonstrated a moderate degree of robusticity overall with slight parietal bossing. The glabellar prominence and superciliary eminence exhibited a level of gracility normally apparent in females. Nasion was moderately depressed. The forehead shape presented a slight

slope. The superior orbital margin was moderately sharp and the mastoid processes demonstrated a moderate degree of robusticity. Examination of the zygoma revealed they were slightly flared while the occipital crest was markedly developed. Palate shape was narrow and deep and the chin was moderately pointed.

Non-metric evaluation revealed a mixture of male and female traits and several characteristics demonstrated an intermediate or moderate level of dimorphism.

#### *5.17.4.2 Innominate Evaluation*

Ten anthroposcopic traits were examined: ilial shape, shape and depth of the greater sciatic notch, presence of a preauricular sulcus, subpubic angle, shape of the pubis, presence of scars of parturition, shape of inferior ramus, beveling of subpubic ramus, auricular platforming, and the shape of the obturator foramen. Each trait with the exception of the obturator foramen was indicative of the female sex.

#### *5.17.4.3 Metric Cranial Assessment*

Discriminant function analysis was performed based on cranial measurements taken from Individual Twenty-Four. Data compiled by Byers (2005) presents the following formula utilized to determine the sex of white crania:

$$3.107 (ML) - 4.643 (MB) + 5.786 (BaBr) + 14.821 (BB) + 1.00 (BaPr) + 2.714 (NaPr) - 5.179 (PB) + 6.071 (LM) \quad (5.9)$$

In this equation, PB represents palatal breadth and LM denotes the length of the mastoid process while in the Frankfurt plane. The definition of the remaining

abbreviations may be found in section 5.17.3.2. The equation for Individual Twenty-Four may be written as follows:

$$= 3.107 (178) - 4.643 (135) + 5.786 (130) + 14.821 (116) + 1.00 (91) + 2.714 (73) - 5.179 (54) + 6.071 (28) \quad (5.10)$$

$$= 553.05 - 626.81 + 752.18 + 1719.24 + 91.00 + 198.12 - 279.67 + 169.99 \quad (5.11)$$

$$= 2577.1$$

When compared to the sectioning point of 2672.39 (Byers 2005), the discriminant function of 2577.1 falls well below indicating Individual Twenty-Four was a female.

#### *5.17.4.4 Individual Twenty-Four Sex Determination Summary*

Although the non-metric cranial evaluation was indeterminate, the innominate and discriminant function analysis clearly affirmed that Individual Twenty-Four was a female during life.

### *5.17.5 Pathology and Developmental Variation*

#### *5.17.5.1 Discrete Traits*

A discussion of non-metric variation may be found in Section 5.6.5.1. Individual Twenty-Four presented several discrete traits including the presence of multiple and

accessory zygomaticofacial foramina and a septal aperture of the olecranon fossa. For a complete listing of these traits, refer to Appendix A, Table 5-4.

#### *5.17.5.2 Pathology*

A minor degree of attrition was present on all teeth. Refer to section 5.9.5.2.1 for a discussion on attrition. The maxillary left fourth premolar and third molar had avulsed prior to death of the individual. The right first molar was extremely corroded with only remnant crown elements present on the buccal surface of the tooth. A large carious lesion was present on the anterior surface of the left right molar. Refer to section 5.6.5.2.2 for a discussion on dental caries. The right third molar was reduced to a small, peg-like tooth. The right mandibular second molar and left first molar were also extremely corroded, with only residual crown elements present. The left third molar and right first molar had avulsed prior to the death. The right third molar exhibited a large carious lesion on the mesial side of the tooth. Enamel hypoplasia was also evident on the dentition of this individual. Refer to section 5.6.5.2.4 for a discussion on enamel hypoplasia.

#### *5.17.5.3 Miscellaneous*

The right manubrial costal facet was enlarged, providing an articular surface for the second rib. The right twelfth rib was extremely small. Small portions of the thyroid cartilage had ossified.

#### *5.17.6 Individual Twenty-Four Osteological Summary*

Individual Twenty-Four was an adult Caucasian female, approximately forty years of age + / - 5 years. This individual demonstrated evidence of poor dental health and enamel hypoplasia signified episodes of previous poor health or nutritional stress. Although the cause of death was not identifiable, odontological infection may have been a contributing factor.

### 5.18 Grave Twenty-Five



Figure 52. Individual Twenty-Five *in situ* (Courtesy Western Heritage Services Inc.)

#### 5.18.1 Skeletal Description

Producing approximately 271 elements and fragments, preservation of Individual Twenty-Five (Figure 53) was excellent. Areas of mummified soft tissue surrounding the neck were preserved. Seven fingernails and one toenail were recovered. Hair preservation was remarkable (Figure 54); over half of the cranial hair was present, including two braids that began at the nape of the neck. Nearly every separate epiphysis was recovered, including those of the phalanges. *En masse* removal and laboratory excavation further facilitated its comprehensive conservation.



Figure 53. Cranium and hair preservation of Individual Twenty-Five

### ***5.18.2 Determined Age Range***

#### ***5.18.2.1 Non-Metric Analysis – Epiphyseal Appearance / Fusion***

The occipital bone had united into a single unit. This element completes its union between the fifth and seventh years (Scheuer and Black 2000). The spheno-occipital synchondrosis had not yet fused. This major area of synthesis closes between the ages of eleven and sixteen in females and between the ages of thirteen and eighteen in males (Scheuer and Black 2000).

The mastoid process was still fairly small and developing. Patency of the foramen of Huschke of the left temporal bone and closure of the right suggests Individual Twenty-Five was approximately five years of age.

Obliteration of the metopic suture suggests the individual was greater than four years old. This correlates to the age produced by the parietal bones which had attained a morphology indicative of late childhood.



The maxilla, zygomae, nasals, palatines and lacrimals had achieved adult morphology. The late stage of development of these bones is suggestive of an age nearing puberty (Scheuer and Black 2000). As the cranium was intact, it was not possible to assess the development of the sphenoid bone.

Although it was not possible to view the ethmoid internally, from the nasal aperture it was possible to observe the perpendicular plate extending down into the nasal cavity. This indicated the individual was nearing puberty (Scheuer and Black 2000).

Ossification of the hyoid body and greater cornu suggest Individual Twenty-Five had attained puberty (Scheuer and Black 2000).

The cervical, thoracic, and lumbar vertebrae had concluded bony unification. In addition, the second cervical vertebrae demonstrated fusion of the *ossiculum terminale* completing the odontoid process. Fusion of this center of ossification occurs during the twelfth year (Scheuer and Black 2000). Development of the lumbar mammillary processes suggests the individual was between eight and ten years of age (Scheuer and Black 2000).

Posterior fusion of the laminae had commenced in the first and second sacral elements. Sacral posterior fusion occurs between years seven and fifteen (Scheuer and Black 2000). Intervertebral fusion was not observed in this individual. Union of the sacral vertebrae commences around age twelve (Scheuer and Black 2000).

The sternum was represented by the manubrium and two sternebrae. Erosion prevented accurate evaluation.

Ischiopubic fusion was observed in both innominates suggesting Individual Twenty-Five was at least five to eight years of age (Scheuer and Black 2000). The pubic symphyseal surface exhibited a pre-epiphyseal stage with a deeply pitted ventral face

and a smoother dorsal face. This morphology is consistent with an individual of approximately thirteen years of age (Scheuer and Black 2000).

The scapula was represented by the coracoid and the body. Coracoid morphology was similar to that of a twelve year old female having nearly reached adult appearance, but not yet fused to the body of the scapula. The center of ossification for the subcoracoid had either not formed or was not recovered. This center appears between ages eight and ten (Scheuer and Black 2000).

Represented by the proximal epiphysis and the diaphysis, the humerus was consistent in appearance with that of an individual between eight years old and adolescence. The proximal epiphysis presented a smooth head, defined posterior notch and a pitted tubercular surface.

The radius consisted of the diaphysis and the distal epiphysis which demonstrated an angular posterior border and developing carpal facets. The ulnar notch had not yet formed and the lateral border had not quite straightened out. These features suggest the individual was between seven and ten years of age.

The capitate, hamate, lunate, trapezoid, trapezium and triquetral carpals were identifiable in isolation suggesting Individual Twenty-Five was between nine and ten years of age. The scaphoid had ossified, but was not identifiable in isolation. Ossification of this bone occurs during age five in female and during age six in males (Scheuer and Black 2000). The pisiform which appears between ages eight and ten had either not yet formed or was not recovered during excavation (Scheuer and Black 2000).

All of the metacarpals were identifiable in isolation and presented unfused distal epiphyses suggesting the individual was less than fourteen years of age (Scheuer and Black 2000).

The proximal epiphyses were present for each of the manual phalanges. These phalangeal epiphyses are present by age four or five (Scheuer and Black 2000).

The femur was represented by the proximal and distal epiphyses, the diaphysis and the greater trochanter the appearance of which intimated an age between eight and twelve years. The proximal epiphysis was very smooth with a distinct *fovea capitis*. Distally, the femur presented a high lateral lip with a forming trochlear groove and smooth condylar surfaces. Formed and identifiable in isolation, the greater trochanter demonstrated a shallow trochanteric fossae and a rounded tip.

The flattened lateral border of the patella was identifiable suggesting the individual was approximately twelve years of age (Scheuer and Black 2000).

Represented by the proximal and distal epiphyses and the diaphysis, the tibia demonstrated a morphology consistent with that of an eight to fourteen year old. The intercondylar eminence was sharp and prominent and the proximal portion of the tibial tuberosity was developing. The medial malleolus was well formed however; the fibular notch had not yet developed. The distal tibia also maintained a notched anterior border.

Consistent in appearance with that of an early adolescent, the distal epiphysis of the fibula was triangular and presented a large talar facet. The fibula was represented by the distal epiphysis and diaphysis. A possible candidate for the proximal epiphysis was noted.

All tarsals were identifiable in isolation suggesting Individual Twenty-Five was at least five or six years old (Scheuer and Black 2000). Due to decomposition, the metatarsals and pedal phalanges could not be accurately assessed.

#### *5.18.2.2 Odontological Age Range*

Individual Twenty-Five presented a mixed dentition. The maxillary dentition consisted of erupted permanent first and second incisors, canines, first premolars, and the first and second molars. With the exception of the deciduous second molar, the remaining adolescent dentition had avulsed. The third molars consisted of unerupted developing crowns. The second premolars were developing beneath the avulsing deciduous first molars which may be observed radiographically.

The mandibular dentition consisted of erupted permanent first and second incisors, canines, partially erupted first premolars and first and second molars. The second deciduous molars were about to avulse while the crown of the third molars were developing.

When compared to data published by Scheuer and Black (2000), the dentition of Individual Twenty-Five was consistent with an individual approximately ten years of age  $\pm$  30 months.

#### *5.18.2.3 Metric Analysis – Maximum Diaphyseal Length*

Maximum diaphyseal length was measured for each complete element. Results were then compared to tabular data compiled by Scheuer and Black (2000).

Measurements were taken from the right and left scapulae, the right and left humerii, the right and left femora and the right and left tibiae. Based on the lengths of these elements, the individual was between six and seven years of age.

#### *5.18.2.4 Individual Twenty-Five Age Summary*

The non-metric osteological evaluation produced a mean age of 9.7 years of age. This data was corroborated by the odontological assessment, which produced an age

range of ten years + / - 30 months. However, the metric assessment produced an age ranging between six and seven years. This incongruity may be due to pathological factors affecting normal appendicular growth and development which will be discussed later on in this section. Consequentially, based on the odontology and non-metric evaluation it is plausible to assume that Individual Twenty-Five was approximately ten years of age at time of death.

#### ***5.18.3 Racial Affiliation***

Ancestry was determined by the presence or absence of shoveling on the lingual aspect of the maxillary incisors (Refer to Section 3.3.1.3). The developing incisors tested positive for this trait indicating Individual Twenty-Five was of First Nations or mixed Aboriginal ancestry. This may be further augmented by the inclusion of several grave goods and personal artefacts buried with this individual. Refer to Chapter Four, section 4.4.5 for information on these items.

#### ***5.18.4 Sex Determination***

Sex determination was attempted for Individual Twenty-Five, although the results should be considered with some caution. Mandibular morphology was not considered in this case as Loth and Hennenberg (2001) advise not to use this method on individuals older than six years of age as the transition to the adult form commences during that year. Schutkowski (1993) argues that the ilial assessment may be used on individuals older than five years of age, but the results should be treated cautiously. As such, the assessment will be presented here for argument's sake, but the results will remain as undetermined due to a lack of confidence in the outcome.

The ilium presented a greater sciatic notch angle that was less than or equal to 90 degrees and a deep greater sciatic notch depth. Each of these traits is considered male in nature (Schutkowski 1993). The ilium also presented a faint iliac crest curvature, a characteristic generally associated with the female sex. The “arch” criterion demonstrated no intersection. This is determined by drawing an imaginary line from the anterolateral or vertical aspect of the arch towards the auricular surface (Schutkowski 1993). If the line intersects with the articular surface, the individual is likely female (Schutkowski 1993). If the line remains lateral to the auricular surface, the individual is likely a male (Schutkowski 1993). Three of four traits were consistent with that of a male, however caution dictates the results should remain as undetermined.

#### ***5.18.5 Pathology and Developmental Variation***

##### ***5.18.5.1 Discrete Traits***

A discussion of non-metric variation may be found in Section 5.6.5.1. Even at this young age, Individual Twenty-Five presented several discrete traits including the presence a septal aperture of the olecranon fossa . For a complete listing of these traits, refer to Appendix A, Table 5-5.

##### ***5.18.5.2 Pathology***

Caries were present on the mandibular and maxillary second deciduous molars. All four of these teeth were nearly ready to avulse, allowing for the expansion and eruption of the permanent premolars underneath. These teeth also exhibited evidence of

heavy attrition. Refer to sections 5.6.5.2.2 and 5.9.5.2.1 for discussions on dental caries and attrition, respectively.

The thoracic spine of Individual Twenty-Five was grossly affected by a kyphotic deformity. The fifth thoracic vertebrae to the twelfth thoracic vertebrae were subject to severe osteolytic processes resulting in the formation of large locular cavities and wedge-shaped centra. Ankylosis or fusion of the sixth and seventh thoracic vertebrae (Figure 55) and the ninth to the eleventh thoracic vertebrae seem to have further contributed to the kyphosis of the thoracic spine. Schmorl's nodes were present in the unaffected thoracic and lumbar elements. This vertebral defect prevented the individual from being positioned in the coffin in a completely extended supine position (Figure 53). The upper body and head were twisted to lie on the left hand side. The lytic defects and kyphotic deformity described here are characteristic of Pott's deformity, a component of vertebral Tuberculosis. A bacterial DNA examination performed by Treena Swanston, a Ph.D graduate from the University of Saskatchewan has confirmed this diagnosis with positive test results.

The Nisbet letters indicate that other individuals within the settlement including Adam McBeath, the schoolteacher were afflicted with tuberculosis thus generating a fertile reservoir of contagion. During this point in time, tuberculosis was both endemic and epidemic in Saskatchewan.

#### 5.18.5.2.1 Tuberculosis

Generated by the pathogen *Mycobacterium tuberculosis* or *Mycobacterium bovis*, tuberculosis is a bacterial infection affecting the soft and skeletal tissues, often the lungs and the vertebral spine. The reservoir and route of infection are the primary differences

between *M.tuberculosis* and *M.bovis*. *M. tuberculosis* is contained within a human reservoir and is generally transmitted pneumatically while *M. bovis* is transmitted via the consumption of ingestion of infected animal byproducts such as milk (Aufderheide and Rodriguez-Martin 1998).

Often presented in two stages, the initial phase consists of the inhalation of the bacteria and the resulting lung infection (Aufderheide and Rodriguez-Martin 1998). In an individual who had never been previously afflicted, this stage may be asymptomatic, but generally results in the formation of tuberculitic, bacilli-filled scarring and remission of the infection (Aufderheide and Rodriguez-Martin 1998). The secondary infection may be due to the breakdown of a bacilli-filled tubercle or pneumatic reinfection affecting the lungs which may disseminate to other organs in the body either gastrointestinally or haematogenously (Aufderheide and Rodriguez-Martin 1998).

Skeletal involvement via the haematogenous spread of the pathogen frequently involves the vertebrae due to the large mass of trabecular bone and the extensive arterial blood supply (Aufderheide and Rodriguez-Martin 1998). Children are most commonly affected by this type of tuberculous infection (Aufderheide and Rodriguez-Martin 1998). Infection generally occurs near the cartilaginous plate, eroding the bony matrix and forming an abscess which ultimately allows the intervertebral disc to herniate through the wall of the centrum, decreasing intervertebral space (Aufderheide and Rodriguez-Martin 1998). By this method, infection to adjacent vertebrae becomes possible. Tuberculosis also frequently affects the joints of the appendicular skeleton such as the hip or knee (Aufderheide and Rodriguez-Martin 1998).

Kyphotic deformity or Pott's deformity, as presented in Individual Twenty-Five (Figure 56) is caused by the anterior collapse of the vertebral body preceded by the



destruction of the trabecular bone housed within. This may be accomplished by the expansion of the original infective abscess within the vertebral centrum, the development of multiple abscesses (Figure 55) or the necrosis of the bone tissue due to the deprivation of blood supply via arterial thrombosis or periosteal detachment (Aufderheide and Rodriguez-Martin 1998).

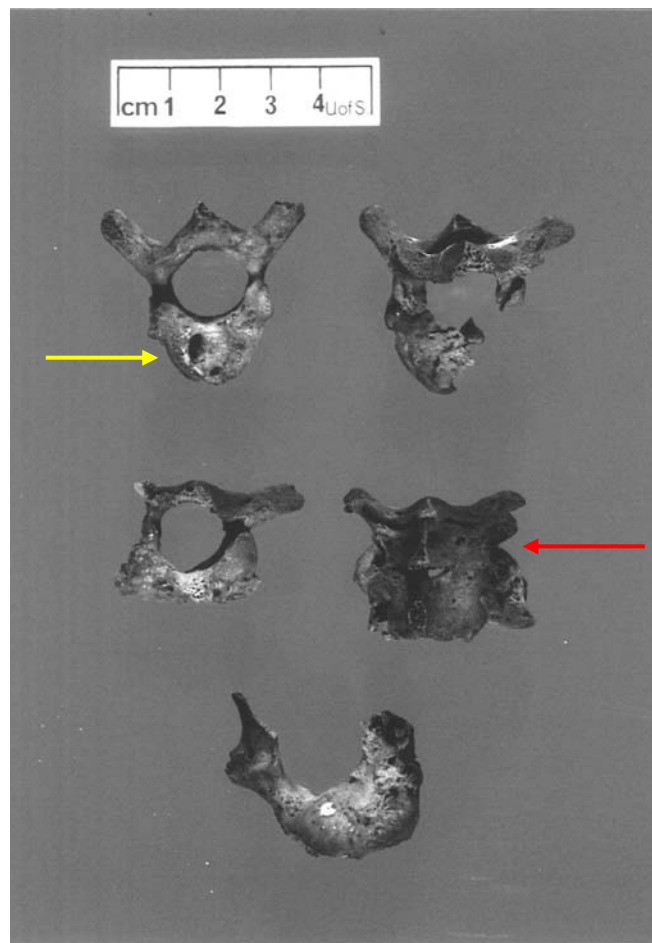


Figure 54. Tuberculous thoracic vertebrae of Individual Twenty-Five. Note multiple central loculi (yellow) and ankylosis (red)

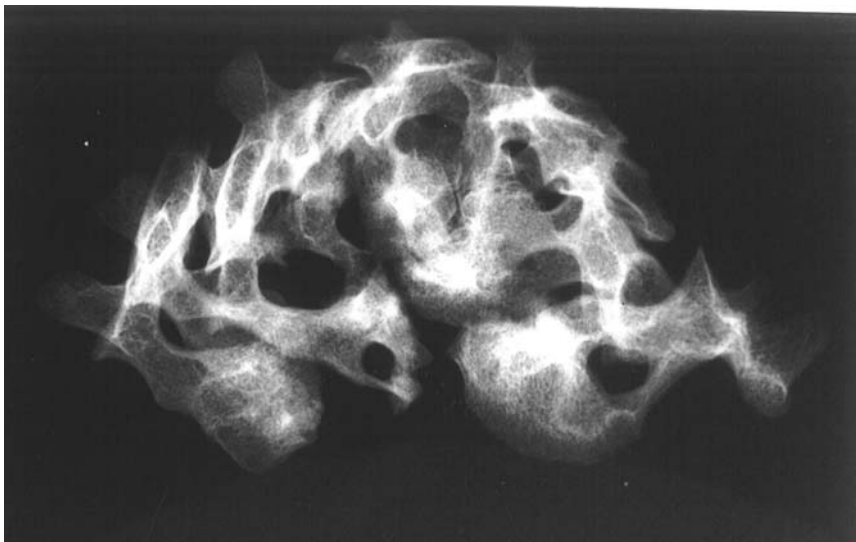


Figure 55. Radiograph of articulated thoracic spine of Individual Twenty-Five. Note severe kyphotic deformity.

In cases of severe kyphotic affliction, death may be due to respiratory or spinal complications but is often due to complications arising from soft tissue infection (Aufderheide and Rodriguez-Martin 1998).

#### ***5.18.6 Individual Twenty-Five Osteological Summary***

Individual Twenty-Five was approximately 10 years of age and of First Nation's or mixed Aboriginal ancestry. The young child may have been a male based on the type of personal artefacts and clothing included in the burial and based on the osteological examination. However, due to the age of the individual the sex must remain undetermined as the method of examination indicates caution when assessing children older than five years.

This individual demonstrated minor dental caries but of primary focus was the presentation of vertebral tuberculosis. It is plausible to assume that given the severe spinal deformity and progression of the disease that this was the cause of death. The

mechanism of death could not be ascertained, but may have been due to respiratory complications due to the acute kyphosis of the vertebral column.

### **5.19 Grave Twenty-Six**

Graves Twenty-Six and Twenty-Seven were recovered by archaeologists from Golder Associates during the initial site assessment. These remains were purported to have been removed from the spoil piles created by topsoil removal during parking lot construction. However, the remains of Individual Twenty-Six were far too complete to have been removed via post-construction activities. It is likely that this individual represents the first grave excavated by Golder in 2005.

#### ***5.19.1 Skeletal Description***

Approximately 185 elements and fragments were recovered during excavation. Preservation of the remains was good to very good as the bone was in excellent condition, however much of the skeleton was missing. Sex and ancestry could not be determined for this individual due to incompleteness of elements.

#### ***5.19.2 Determined Age Range***

##### ***5.19.2.1 Non-Metric Analysis – Epiphyseal Appearance / Fusion***

The occipital bone had fused completely, becoming a single element. This fusion occurs between ages five and seven (Scheuer and Black 2000). However, the spheno-occipital synchondrosis remained patent. This major centre of union commences closure between the ages of eleven and sixteen in females and thirteen and eighteen in males (Scheuer and Black 2000).

The temporal bone was fully formed, imparting an age greater than five years old. The parietal bone and mandible also demonstrated an adult morphology suggesting an age range during childhood.

Obliteration of the metopic suture and fusion of the frontal bone suggested that Individual Twenty-Six was greater than four years of age (Scheuer and Black 2000).

Ossification of the dorsum sellae indicated that the individual was five years of age or older. In addition, the sphenoidal conchae had fused to the ethmoid. This fusion occurs between the ages of four and puberty (Scheuer and Black 2000).

The edges of the vomerine groove were in the process of closing indicating that the individual was between age ten and puberty (Scheuer and Black 2000).

Neurocentral fusion and fusion of the primary centers of ossification had occurred in all recovered thoracic and lumbar vertebrae suggesting Individual Twenty-Six was approximately five to six years of age (Scheuer and Black 2000). However, the mammillary processes were just beginning to form which suggests the individual may have been between six and eight years old (Scheuer and Black 2000).

The left lateral element and the neural arch had not fused to the body of the first sacral element completely. Posterior fusion was not evident in sacral elements one, four and five. This morphology indicates Individual Twenty-Six may have been between five and eight years of age.

Represented by the unfused ilium, ischium, and pubis, the innominate was consistent with an individual between four and six years of age. The ilial acetabular surface presented a distinct iliopectineal promontory, clearly demarcated articular surfaces for the pubis and ischium, a central depression and a flattened gluteal border.

The central non-articular plaque of the pubic acetabular surface had not yet appeared. It was unclear if ischopubic union had occurred.

Morphology of the distal radial epiphysis was similar to that of a seven to ten year old. Wedge –shaped in appearance, it presented well-defined scaphoid and lunar facets and a developing dorsal tubercle. The styloid process had not commenced development.

The proximal epiphysis of the femur presented a smooth articular surface, a distinct *fovea capitis*, a beak-like projection on the inferior surface and well-defined margins. These features are consistent with that of an early adolescent (Scheuer and Black 2000).

Proximally, the tibia presented a prominent intercondylar eminence and exhibited a forming posterior groove. The distal epiphysis presented a fibular notch in the early stages of development. As such, an age range of eight to fourteen years of age may be proposed for this individual based on these tibial characteristics.

All the tarsals were present and identifiable in isolation. These bones reach this stage of development between the ages of three and five in female and five and seven in males (Scheuer and Black 2000).

Presence of the pedal sesamoids and the basal epiphysis of the first metatarsal suggest Individual Twenty-Six was between the ages of nine and twelve at time of death.

#### *5.19.2.2 Odontological Age Range*

The dentition was represented by mandibular teeth only. Individual Twenty-Six presented a mixed dentition. The mandibular dentition consisted of erupted permanent first and second incisors, canines, and first molars. The first and second deciduous molar

were still in place while the left first premolar and second and third permanent molars were developing.

When compared to data published by Scheuer and Black (2000), the dentition of Individual Twenty-Six was consistent with an individual between nine and ten years of age.

#### *5.19.2.3 Metric Analysis – Maximum Diaphyseal Length*

Maximum diaphyseal length was measured for each complete element. Results were then compared to tabular data compiled by Scheuer and Black (2000). Measurements were taken from the right and left ulna, the right radius, the right and left femora, the right and left tibiae, and the right fibula. Based on the lengths of these elements, the individual was approximately eight years of age.

#### *5.19.2.4 Individual Twenty-Six Age Summary*

The results of the non-metric, metric, and odontological assessments produced very similar outcomes. The mean age determined from the non-metric study was 7.7 years of age while the metric study produced an average age of 8 years old. The odontological age produced was between 9 and 10 years of age. As such, it is safe to assume that Individual Twenty-Six was between 8 and 10 years of age at time of death.

#### *5.19.3 Pathology*

Upon radiological examination, lines of arrested development were observed suggesting the individual was subject to episodes of severe nutritional stress and / or poor health. Refer to section 5.3.5.2 for information on lines of arrested growth.

#### ***5.19.4 Individual Twenty-Six Osteological Summary***

Individual Twenty-Six was between the ages of eight and ten years old at time of death. The race and sex could not be ascertained for this individual. During this person's development, they were subject to episodes of nutritional or pathological stress severe enough to arrest normal growth patterns.

### **5.20 Grave Twenty-Seven**

#### ***5.20.1 Skeletal Description***

This individual was recovered from the spoil pile following construction activities. Only seven elements and fragments were recovered upon removal. The sex and racial affiliation could not be assessed for this individual due to the lack of required elements.

#### ***5.20.2 Determined Age Range***

##### ***5.20.2.1 Non-Metric Analysis – Epiphyseal Appearance / Fusion***

The mandible was represented by the right half and a small portion of the left. Fusion was observed at the symphyseal surface indicating the individual was at least one year old at time of death (Scheuer and Black 2000).

##### ***5.20.2.2 Odontological Age Range***

The mandible demonstrated a full deciduous dentition upon exhumation. The first and second right deciduous molars had erupted while the crown of the first

permanent molar was in development. A radiographic examination demonstrated the permanent canine and incisors developing beneath the alveolar margin.

When compared to data published by Scheuer and Black (2000), the dentition of Individual Twenty-Seven was consistent with an individual two years of age + / - eight months.

#### *5.20.2.3 Metric Age Assessment*

Maximum diaphyseal length was measured for each complete element. Results were then compared to tabular data compiled by Scheuer and Black (2000). Measurements were taken from the right femur. Based on the length of this element, the individual was approximately one and a half to two years of age.

#### *5.20.2.4 Individual Twenty-Seven Age Summary*

Based on the meagre information available, Individual Twenty-Seven was likely between one and two years of age at time of death.

#### *5.20.3 Miscellaneous*

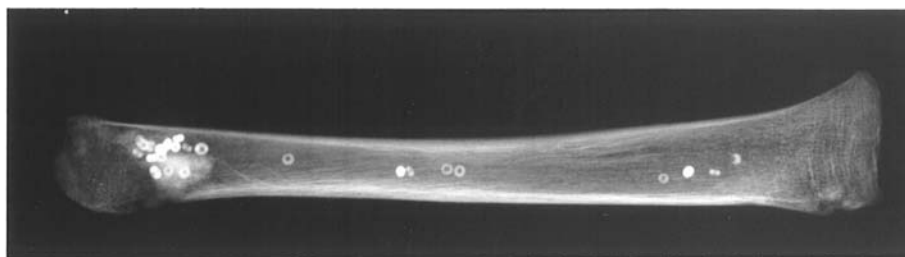


Figure 56. Seed beads within medullary cavity of left tibia of Individual Twenty-Seven

Upon radiographic examination, the medullary cavity of the left tibia exhibited small circular objects trapped inside the bone (Figure 57). These were identified as seed



beads. It is unclear as to how they had entered the bone, although it does not appear to have been performed intentionally. A large crack in the cortical bone at the distal end of the shaft suggests they may have dropped in upon decomposition and likely came from a piece of ornate clothing. The bone was left intact so a sample of the beads could not be analyzed.

#### ***5.20.4 Individual Twenty-Seven Osteological Summary***

Individual Twenty-Seven was between the ages of one and two at time of death. The age and sex could not be ascertained. This young individual may have been clothed with beaded garments in preparation for burial.

### **5.21 Archival Burial Record Search**

The lack of a formal burial register for this cemetery made it nigh impossible to identify of the interred individuals. However, an attempt was made to identify those interred by means of an archival literature search. Rev. Nisbet's letters and journal provide the names and incidents of those who had died at the Mission while he was stationed there. The Saskatchewan Herald obituaries and death notices were also examined for potential candidates. Letters written by Rev. Nisbet's successors in the Home and Foreign Record were few and far between providing little to no information regarding events at the Mission.

In a letter to his brother Henry, James Nisbet describes the illness and death of a young First Nation man named Thomas (See section 2.2.1). Nisbet diagnoses Thomas with having galloping consumption and describes him as delirious (J. Nisbet to H. Nisbet, letter, 17 January 1867, Nisbet Family Fonds, Glenbow Archives, Archives

Society of Alberta 2009). Subsequent to his death, the young man was brought back to the Mission and interred there. Although it would seem that Thomas could be a match to Individual Twenty-Five, the description of his illness does not correlate to the type of tuberculosis demonstrated here. Galloping consumption occurs when the primary tuberculous infection is of a severity great enough that the bacilli are rapidly and haematogenously disseminated throughout the body (Aufderheide and Rodriguez-Martin 1998). This form of tuberculosis initiates as a pneumonia and culminates as tuberculosis meningitis (Aufderheide and Rodriguez-Martin 1998). This would account for the state of delirium presented by patients in the terminal stages of the disease (Anderson 1890). As galloping consumption may progress within a number of weeks (Anderson 1890) the opportunity for skeletal involvement, particularly of the magnitude presented in Individual Twenty-Five, is inadequate. Individuals presenting tuberculous infection with skeletal involvement are typically chronic secondary cases where infection may last for a number of years.

Nisbet frequently refers to the death of Isabella Turner (See section 2.2.1), aged five, who died March 27, 1869 (Rev. James Nisbet, personal diary, 27 March 1869, 1.11 Saskatchewan Archives Board). The death of this little girl affected him profoundly. She and her twin sister, Anne had been sent to the Mission for education. Unbeknownst to the Reverend, the father had decided to take the girls home during Rev. Nisbet's absence. On the journey back to the plains, Anne fell from the cart and died. The location of her burial is not mentioned. Following her death, the father returned Bella to the Mission feeling horrible for his hasty actions. Subsequent to her return, Bella's health was in a state of flux until one morning she awoke violently coughing blood (Rev. James Nisbet, personal diary, 27 March 1869, 1.11 Saskatchewan Archives Board).

Based on Rev. Nisbet's description and diagnosis of a burst blood vessel and the fast nature of her death, it is possible that Bella's death may have been due to a ruptured pulmonary aneurysm. However, Bella and Anne's age, sex, race and cause of death do not correlate with any of the individuals interred in the cemetery.

Nisbet names three more individuals who died during his time at the Mission (see section 2.2.1). The baby of Rev. and Mrs. Vincent died on October 7, 1873 (Rev. James Nisbet to Isabella Nisbet, letter, 7 October 1873, 1.111 SAB). Nancy McKay was born on July 3, 1868 and died February 1, 1869 at seven in the morning (Rev. James Nisbet, personal diary, 1 February 1869, 1.11 Saskatchewan Archives Board). Unfortunately, specific details regarding health, sex or ancestry were not provided. As such, it is not possible to accurately correlate these infants with the Forest Centre individuals.

James, an invalid Aboriginal man, died on December 30, 1869 (The Home and Foreign Record, May 1870 Appendix: 3) (Refer to section 2.2.1). Only one Aboriginal adult male was interred within the cemetery population. Individual Sixteen (Section 5.9) presented major odontological pathology, linear enamel hypoplasia and tibial periostitis. The periostitic infection is often accompanied by pain and swelling (Bates 1985; Golding 1985). The pain may have been enough to affect his gait or even prevent normal locomotion. However, Nisbet indicates his hands and feet were full of sores and the man could only crawl (The Home and Foreign Record, May 1870 Appendix: 3), which would likely aggravate tibial periostitis. Therefore it is unlikely that these individuals are a match.

Rev. Nisbet also mentions two children who died during a whooping cough epidemic at the Mission (Rev. James Nisbet to Isabella Nisbet, letter, 17 October 1873,

1.111 SAB). However, no details regarding their identity were given and whooping cough does not leave any skeletal indicators. As such it is not possible to correlate either of these individuals with those interred at the Forest Centre cemetery.

Several burials including the son of Charles Mair, a rather colourful character in Prince Albert's history, are listed within the Death Notices section of the Saskatchewan Herald. However, these early obituaries don't commence until 1878. The Colleston United Church cemetery and St. Mary's Anglican Church cemetery were reportedly established in 1885 and 1873, respectively. As no mention of their religious affiliation is made, it is unclear as to where they may have been buried.

The inconclusive correlation between the deceased individuals recorded by James Nisbet and those interred within the cemetery begs the question: Where are these individuals located? It is feasible to theorize that they may have been disturbed during previous construction adjacent to the Forest Centre. As discussed in Chapter Two, it is very possible that the cemetery was once larger than what had been excavated.

## **5.22 Summary**

The Forest Centre cemetery contained a population consisting of twenty-one individuals who consisted of four adults, two fetuses, nine infants, and six juveniles. The high infant and child mortality was neither uncommon nor unexpected given the estimated date of the cemetery itself, 1867 to 1880s. Of these individuals, 11 were of First Nations or mixed Aboriginal ancestry and four were of Caucasian descent, with the remaining six remained undetermined. This ratio is consistent with the population surrounding and inhabiting the Mission during this time period. Over half of the population presented skeletal evidence of poor health. In view of the proposed cemetery

usage date, this was not an unanticipated phenomenon. Medical treatment was not readily available prior to 1877 when Dr. Everett Porter established his practice at Prince Albert.

A historic document search did not provide any concrete evidence as to the identity of those interred within the Forest Centre cemetery. Although several candidates seemed promising, either there was not enough substantial evidence to warrant a positive identification or the physiological details were not compatible. The lack of correlation further supports the hypothesis that the Forest Centre cemetery was once larger than the sample excavated.

## **CHAPTER SIX**

### **Conclusion**

Despite the lack of formal burial and historic records pertaining to the Forest Centre cemetery, a great deal of information about its population could be inferred based solely on bones, buttons, and boxes, so to speak. The skeletal remains and artefactual evidence permitted observation into the past, granting detailed, yet often overlooked information not normally written in letters or history books. These minute details are what help to identify a community or culture and provide insight into their way of life.

Placing the cemetery within a historic and geographical context was imperative to identifying the socio-religious background of those interred. Its location within the Presbyterian Mission district not only provided data that contributed to a proposed timeframe for the cemetery, 1867-1880s, but created the foundation for the reconstruction of the Mission itself, its growth and the activities that occurred there. Although previous studies have been conducted regarding the history of Prince Albert and the Mission, this is the first in-depth research on the reconstruction of the Mission property.

Artefactual evidence was moderate in quantity, the majority being affiliated with coffin hardware or construction. Few personal artefacts were recovered and only one of these could be ascribed to a particular time frame which correlated to the proposed timeframe. In addition to the interment style, the presence of purple cloth further

contributed to the affirmation that this was a Christian Presbyterian burial. Cemetery placement also provided clues pertaining to the chronology of the burial clusters themselves.

The 21 individuals buried at the Forest Centre cemetery imparted a large amount of data regarding the health and demographics of this pioneering population. The high ratio of individuals exhibiting First Nation and / or mixed Aboriginal ancestry was consistent with the predominantly Métis and Cree population that inhabited the Mission region and the young ages demonstrated by the majority of the interred population were congruent with a settling nineteenth century demographic. Much of this group presented evidence of poor health, a testament to the physiological risks posed in regions lacking medical treatment. Although these characteristics were not unexpected, they were an affirmation of the proposed historic context, a confirmation of the hardships faced during this time period, and a physical proof of the health status and lifeways of this ancestral population.

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Appendix A  
Osteometric Data and Discrete Traits

Table 5-1 Summary of Osteological Analysis

Individual / Grave Number	Determined Age Range	Racial Affiliation	Sex	Pathology
8	38 fetal wks. – Birth	Undetermined	Undetermined	N/A
9	8 fetal mnths. – Birth	Undetermined	Undetermined	N/A
10	1.5 – 3 yrs. +/- 12 mnths.	First Nations / Mixed Ancestry	Female	*Tripartite Os Inca; Lines of Arrested Growth
11	1 yr. +/- 6 mnths.	First Nations / Mixed Ancestry	Undetermined	N/A
12	Neonatal	First Nations / Mixed Ancestry	Undetermined	Tibial Pathology
13	23 – 33 yrs. +/- 2 yrs.	Caucasian	Male	Juvenile Porotic Hyperostosis; Dental Caries; Chronic Periodontal Disease; Linear Enamel Hypoplasia; *Dental Amalgam
14	0-9 mnths.	Undetermined	Undetermined	N/A
15	4 yrs.	First Nations / Mixed Ancestry	Likely Male	N/A
16	40 – 44 yrs.	First Nations / Mixed Ancestry	Likely Male	Attrition; Tibial Periostitis; Linear Enamel Hypoplasia; Dental Caries
17	6 mnths.	Caucasian	Likely Male	Tibial Pathology
18	3 yrs. +/- 6 mnths.	Undetermined	Possible Male	Severe Dental Caries; Auditory Exostosis



19	40-50 yrs.	First Nations / Mixed Ancestry	Female	N/A
20A	Neonatal	First Nations / Mixed Ancestry	Undetermined	N/A
20B	1 yr.	First Nations / Mixed Ancestry	Undetermined	N/A
21	6 mnths. +/- 6 mnths.	First Nations / Mixed Ancestry	Undetermined	Osteomyelitis
22	3-6 mnths.	First Nations / Mixed Ancestry	Undetermined	Undetermined
23	Late fetal – Neonatal	Caucasian	Undetermined	N/A
24	40 yrs. +/- 5 yrs.	Caucasian	Female	Attrition; Dental Caries; Enamel Hypoplasia
25	10 yrs.	First Nations / Mixed Ancestry	Undetermined	Dental Caries; Vertebral Tuberculosis
26	8-10 yrs.	Undetermined	Undetermined	Lines of Arrested Development
27	1-2 yrs.	Undetermined	Undetermined	N/A

Table 5-2 Summary of Juvenile Metric Analysis

(All measurements are of Max. Diaphyseal Length unless otherwise stated. All measurements are in millimeters. Proposed age of the individual based on metric and non-metric analysis.)

Individual	Clavicle (L/R)	Scapula Max. Height (L/R)	Scapula Max. Width (L/R)	Humerus (L/R)	Humerus Fetal Dist. Width (L/R)	Ulna (L/R)
8	N/A	N/A	N/A	N/A / 63	15 / 16	55 / 57
9	N/A	N/A	N/A	N/A	N/A	N/A
10	65 / 67	N/A	N/A	119 / 118	N/A	98 / 97
11	N/A	N/A	N/A	N/A	N/A	N/A
12	N/A	N/A	N/A	61 / N/A	N/A	N/A
14	N/A	N/A	N/A	N/A	N/A	N/A
15	77 / 77	N/A	N/A	160 / 157	N/A	132 / 132
17	46 / N/A	34 / N/A	27 / N/A	N/A / 68	N/A	N/A
18	77 / 77	N/A	N/A	N/A	N/A	N/A / 122
20A	N/A	N/A	N/A	61 / N/A	N/A	61 / N/A
20B	N/A	N/A	N/A	N/A	N/A	N/A
21	N/A	N/A	N/A	N/A	N/A	N/A
22	N/A	N/A	N/A	N/A	N/A	N/A
23	N/A	N/A	N/A	N/A	N/A	N/A
25	N/A	80 / 81	61 / N/A	199 / N/A	N/A	N/A
26	N/A	N/A	N/A	N/A	N/A	N/A / 178
27	N/A	N/A	NA	N/A	N/A	N/A

Individual	Radius (L/R)	Femur (L/R)	Femur Fetal Shaft Width (L/R)	Tibia (L/R)	Fibula (L/R)	Proposed Age of the Individual
8	48 / 49	71 / 70	N/A	N/A	N/A	38 Fetal Wks. – Birth
9	N/A	N/A	N/A	N/A	N/A	8 Fetal mnths. - Birth
10	88 / 88	160 / 161	N/A	127 / 129	123 / 124	1.5 – 3 yrs. +/- 12 mnths.
11	N/A	121 / 121	N/A	101 / 102	N/A	1 yr. +/- 6 mnths.
12	N/A	N/A	N/A	N/A	N/A	Neonatal
14	N/A	N/A	N/A	N/A	N/A	0-9 mnths.
15	118 / 118	216 / 217	N/A	174 / 173	172 / 173	4 yrs.
17	N/A	81 / N/A	N/A	52 / N/A	N/A	6 mnths.
18	110 / N/A	N/A	N/A	N/A / 150	N/A	3 yrs. +/- 6 mnths.
20A	N/A	78 / N/A	21 / N/A	N/A	N/A	Neonatal
20B	N/A	N/A	N/A	N/A	N/A	1 yr.
21	N/A	97 / 96	N/A	N/A / 84	N/A	6 mnths. +/- 6 mnths.
22	N/A	103 / 103	N/A	N/A	N/A	3-6 mnths.
23	N/A	N/A	N/A	N/A	N/A	Late fetal / Neonatal
25	N/A	274 / 271	N/A	223 / 222	N/A	10 yrs.
26	N/A / 168	308 / 307	N/A	254 / 243	N/A / 252	8-10 yrs.
27	N/A	162 / N/A	N/A	N/A	N/A	1-2 yrs.

Table 5-3 Adult Cranial Metric Analysis Data (mm)

Measurement	Individual Thirteen	Individual Sixteen	Individual Nineteen	Individual Twenty-Four
Cranial Length	N/A	N/A	N/A	178
Cranial Breadth	N/A	N/A	N/A	135
Basi-Bregmatic Height	N/A	N/A	N/A	130
Basi-Nasal Length	N/A	N/A	N/A	98
Basi-Prosthion Length	N/A	N/A	N/A	91
Biasterionic Breadth	N/A	N/A	N/A	101
Auricular Height	N/A	N/A	N/A	114
Biauricular Breadth	N/A	N/A	N/A	112
Minimum Frontal Breadth	93	N/A	N/A	89
Maximum Frontal Breadth	N/A	N/A	N/A	114
Bistephanic Breadth	N/A	N/A	N/A	113
Bijugal Breadth	N/A	N/A	N/A	98
Bizygomatic Breadth	N/A	N/A	N/A	115
Upper Facial Height	75	N/A	N/A	73
Biorbital Breadth (lat.)	N/A	N/A	N/A	94
Biorbital Breadth (med.)	N/A	N/A	N/A	18
Orbital Height	N/A	N/A	N/A	47
Orbital Breadth	N/A	N/A	N/A	37
Nasal Height	53	N/A	N/A	53
Nasal Breadth	21	N/A	N/A	21
Cheek Height	16	N/A	N/A	23
Palatal Length	49	N/A	N/A	49
Palatal Breadth	59	N/A	N/A	54
Foramen Magnum Length	N/A	N/A	N/A	35

Foramen Magnum Breadth	N/A	N/A	N/A	29
Mid-orbital Breadth	N/A	N/A	N/A	44
Horizontal Circumference	N/A	N/A	N/A	503
Bimaxillary Chord	N/A	N/A	N/A	81
Maxillo- alveolar Breadth	N/A	N/A	N/A	54
Inferior Malar Length	N/A	N/A	N/A	29
Simotic Chord	10	N/A	N/A	7
Bifrontal Chord	N/A	N/A	N/A	88
Bifrontal Subtense	N/A	N/A	N/A	16
Zygomaxillary Subtense	N/A	N/A	N/A	31
Bimaxillary Subtense	N/A	N/A	N/A	37
Horizontal Malar Chord	N/A	N/A	N/A	50
Horizontal Malar Subtense	N/A	N/A	N/A	8
Vertical Malar Chord	N/A	N/A	N/A	45
Frontal Chord	125	N/A	N/A	104
Frontal Subtense	28	N/A	N/A	27
Frontal Fraction	54	N/A	N/A	50
Frontal Arc	138	N/A	N/A	120
Parietal Chord	N/A	N/A	N/A	110
Parietal Subtense	N/A	N/A	N/A	24
Parietal Fraction	N/A	N/A	N/A	60
Parietal Arc	N/A	N/A	N/A	122
Occipital Chord	N/A	N/A	N/A	100
Occipital Subtense	N/A	N/A	N/A	26
Occipital Fraction	N/A	N/A	N/A	41

Occipital Arc	N/A	N/A	N/A	114
Horizontal Malar Arc	N/A	N/A	N/A	59
Vertical Malar Arc	N/A	N/A	N/A	44

Table 5-4 Adult Post-Cranial Metric Analysis Data (mm) (Left / Right)

Measurement	Individual Thirteen	Individual Sixteen	Individual Nineteen	Individual Twenty-Four
<i>Clavicle:</i>				
Maximum Length	172 / 161	147 / 147	147 / N/A	131 / 130
Maximum Midshaft Diameter	13 / 12	12 / 12	10 / 10	11 / 11
Minimum Midshaft Diameter	10 / 11	8 / 8.5	7 / 8	8 / 8
Midshaft Perimeter	37 / 40	33 / 34	33 / 30	33 / 33
<i>Scapula:</i>				
Scapular Height	N/A	N/A	N/A	N/A / 134
Scapular Breadth	N/A	N/A	N/A	99 / 100
Glenoid Height	37 / 38	35 / 35	33 / 33	31 / 32
Glenoid Breadth	26 / 28	N/A	21 / 22	23 / 23
<i>Humerus:</i>				
Maximum Length	341 / 348	317 / 313	N/A / 307	281 / 281
Midshaft Diameter (a-p)	24 / 20	21 / 20	21 / 21	16 / 15.5
Midshaft Diameter (transverse)	22 / 25	19.5 / 20	17 / 17	17 / 18
Midshaft Perimeter	72 / 74	64 / 67	60 / 60	56 / 57
Head Diameter	49 / 47	40 / 42	N/A	32.5 / 32.5
Epicondylar Breadth	N/A	N/A	54 / N/A	50 / N/A
<i>Ulna:</i>				
Maximum Length	275 / 278	250 / 254	248 / 245	215 / 218
Midshaft Diameter (a-p)	13 / 13	11 / 13	12 / 12	10.5 / 11

Midshaft Diameter (transverse)	16 / 18	16 / 18	14 / 15.5	12 / 13
<i>Radius:</i>				
Maximum Length	253 / 255	232 / 232	223 / 224	199 / 201
Midshaft Diameter (a-p)	13 / 13	11 / 12	11 / 11	9.5 / 10
Midshaft Diameter (transverse)	15 / 16	15 / 16	14 / 14	12 / 13
Head Diameter	23 / 24	21 / 20	19 / 20	18 / 18
<i>1<sup>st</sup> Metacarpal:</i>				
Maximum Length	53 / 53	43 / N/A	46 / 46	41 / 42
Midshaft Diameter (a-p)	9 / 9.5	N/A / 8	8 / 8	7 / 7
Midshaft Diameter (transverse)	11 / 11	N/A / 12	10 / 11	10 / 10
<i>Innominate:</i>				
Iliac Breadth	N/A	N/A	N/A	153 / 153
Acetabular Diameter (horizontal)	57 / 55	N/A / 53	50 / N/A	50 / 50
Sciatic Notch Width	N/A / 55	N/A	60 / 66	48 / 50
Cotylosciatic Breadth	37 / 40	N/A / 35	34 / 33	34 / 34
<i>Femur:</i>				
Oblique Length	491 / 487	455 / 458	441 / 436	384 / 384
Maximum Length	495 / 494	458 / 463	445 / 438	385 / 388
Midshaft Diameter (a-p)	31 / 31	30 / 29	27.5 / 26	22.5 / 22.5
Midshaft Diameter (transverse)	30 / 29	28 / 27	27 / 25	26 / 25
Midshaft Perimeter	95 / 96	90 / 90	85 / 80	76 / 76
Head Diameter	51 / 51	46 / 48	43 / N/A	39 / 40
<i>Tibia:</i>				
Maximum Length	406 / 399	376 / 382	N/A	318 / 317
Midshaft Diameter (a-p)	30 / 30	28 / 31	30 / 30	24 / 22.5



Midshaft Diameter (transverse)	25 / 26	23 / 24	22 / 20	20 / 20
<i>Fibula:</i>				
Maximum Length	385 / 373	356 / 364	N/A	308 / 307
Midshaft Diameter (a-p)	17 / 16	13 / 15	13 / 15	12 / 13
Midshaft Diameter (transverse)	13 / 15	11 / 11	10 / 11	9.5 / 8.5

Table 5-5 Discrete Traits

 (-) Absent (+) Present  
 (Left / Right)

Variation	Individual Thirteen	Individual Sixteen	Individual Nineteen	Individual Twenty-Four
Metopic Suture	-	-	-	-
Supraorbital Notch	- / -	- / -	+ / +	- / +
Supraorbital Foramen	+ / -	- / -	- / -	+ / -
Infraorbital Suture	- / -	+ / -	- / +	+ / +
Infraorbital Accessory Foramina	- / -	2 / 1	- / -	- / -
Zygomaticofacial Foramen	1 primary, 2 accessory / 3 accessory	- / -	3 primary / 3 primary	2 primary, 5 accessory / 1 primary, 7 accessory
Parietal Foramen	+ / -	- / -	- / -	+ / +
Epipteric Bone	N/A	-	N/A	-
Coronal Ossicle	-	-	-	-
Bregmatic Ossicle	-	-	-	-
Sagittal Ossicle	-	-	-	-
Apical Bone	-	-	-	-
Lambdic Ossicle	-	N/A	-	-
Asterionic Bone	-	N/A	- / +	-
Occipitalmastoid Ossicle	-	N/A	N/A	+ / +
Parietal Notch Bone	N/A	N/A	- / +	- / -
Os Inca	-	N/A	-	-
Os Japonicum	-	-	-	-
Posterior Condylar Canal	N/A	N/A	- / + bifurcated	+ / +
Hypoglossal Canal	N/A	- / + bridging	- / -	- / + bifurcated
Sagittal Transverse Sinus	N/A	N/A	Right side favoured	N/A
Incomplete Foramen Ovale	N/A	- / -	N/A	- / -

Frontal Crest	Double ridge and groove	-	-	-
Incomplete Foramen Spinosum	N/A	- / -	N/A	- / -
Pterygoid Bridging	N/A	N/A	N/A	- / -
Tympanic Dehiscence	- / -	- / -	- / -	- / -
Mastoid Foramen	+ / -	- / -	- / -	+ / -
Mental Foramen	+ / +	- / -	- / -	+ / +
Mandibular Torus	N/A	N/A	-	-
Septal Aperture	-	N/A	-	-
Frontal Grooves	-	-	-	-
Ethmoidal Foramina	N/A	N/A	N/A	N/A
Supratrochlear Notch / Foramen	Notches + / +	- / -	- / -	- / -
Trochlear Spur	- / -	- / -	- / -	- / -
Double Occipital Condylar Facet	- / N/A	- / -	N/A	- / -
Paracondylar Facet	- / -	- / -	N/A	N/A
Jugular Foramen Bridging	Incomplete / N/A	- / N/A	- / -	Incomplete / -
Pharyngeal Tubercle / Fossa	N/A	Tubercle present	N/A	Tubercle present
Clinoid Bridging / Spurs	N/A	N/A	- / -	- / -
Accessory Lesser Palatine Foramina	+ / -	N/A	- / -	+ / +
Palatine Torus	-	N/A	-	+
Rocker Mandible	-	-	-	-
Suprameatal Pit / Spine	- / N/A	- / -	- / -	- / -
Marginal Tubercle	+ / +	+ / +	- / -	- / +
Zygomaxillary Tubercle	- / -	N/A	- / -	- / -
Lambdoidal Wormian Ossicles	N/A	N/A	+	+

Mastoid Notch	+ / N/A	- / N/A	- / +	- / -
Palatine Suture Morphology	Anterior Bulge	N/A	Linear	Anterior Bulge
Supreme Nuchal Line	N/A	N/A	N/A	-
Precondylar Tubercle	N/A	-	N/A	-
Parietal Process of Tympanic Squama	- / -	N/A	N/A	- / -
Paracondylar Process	N/A	N/A	- / -	- / -
Accessory Optic Canal	N/A	N/A	N/A	- / -
Foramen Vesalius	N/A	N/A	N/A	- / -
Retroarticular Bridge	N/A	N/A	N/A	N/A
Accessory Transverse Foramina	-	- / -	N/A	- / -
Vertebral Number Shift	-	-	-	-
Accessory Sacroiliac Articulation	-	-	-	-
Suprascapular Foramen / Notch	Notch + / +	Notch + / +	Notch + / N/A	Notch + / +
Accessory Acromial Articular Facet	- / N/A	N/A	- / -	- / -
Glenoid Fossa Extension	- / -	- / -	- / -	-
Circumflex Sulcus	N/A	N/A	N/A	-
Sternal Foramen	N/A	-	-	-
Supratrochlear Spur	N/A	N/A	N/A	N/A
Allen's Fossa	N/A	N/A	N/A	N/A
Porier's Facet	N/A	N/A	N/A	N/A
3 <sup>rd</sup> Trochanter	- / -	- / -	- / -	- / -
Vastus Notch	-	-	- / -	- / -
Squatting Facet	- / -	- / -	- / +	- / -

Appendix B  
Catalogue and Data Forms

## Catalogue of Skeletal Material

Grave \_\_\_\_\_

### *Zone A: Cranium, Hyoid, Cervical Vertebrae*

#### I. *Cranium:*

- i. Occipital \_\_\_\_\_
  - Pars Basilaris
  - Left Pars Lateralis
  - Right Pars Lateralis
  - Pars Squama
- ii. Temporal \_\_\_\_\_
  - Left Petromastoid
  - Left Squamotympanic
  - Right Petromastoid
  - Right Squamotympanic
  - Ossicles
- iii. Frontal \_\_\_\_\_
  - Left Frontal
  - Right Frontal
- iv. Parietal \_\_\_\_\_
  - Left Parietal
  - Right Parietal
- v. Maxillae \_\_\_\_\_
  - Left Maxilla
  - Right Maxilla
- vi. Maxillary Dentition: Deciduous / Mixed / Permanent
  - Ldi1
  - Rdi1
  - LI1
  - RI1
  - Ldi2

- Rdi2
  - LI2
  - RI2
  - Ldc
  - Rdc
  - LC
  - RC
  - LP3
  - RP3
  - LP4
  - RP4
  - Ldm1
  - Rdm1
  - LM1
  - RM1
  - Ldm2
  - Rdm2
  - LM2
  - RM2
  - LM3
  - RM3
- vii. Zygoma \_\_\_\_\_
- Left Zygoma
  - Right Zygoma
- viii. Lacrimal \_\_\_\_\_
- Left Lacrimal
  - Right Lacrimal
- ix. Sphenoid \_\_\_\_\_
- Left Greater Wing
  - Right Greater Wing
  - Body (Incl. Lesser Wings)

- x. Nasal \_\_\_\_\_
  - Left Nasal
  - Right Nasal
- xi. Ethmoid \_\_\_\_\_
  - Left Ethmoid
  - Right Ethmoid
- xii. Vomer \_\_\_\_\_
  - Left Leaf
  - Right Leaf
  - Alae / Base
- xiii. Inf. Nasal Conchae \_\_\_\_\_
  - Left Concha
  - Right Concha
- xiv. Palatine \_\_\_\_\_
  - Left Palatine
  - Right Palatine
- xv. Mandible \_\_\_\_\_
  - Left Mandible
  - Right Mandible
- xvi. Mandibular Dentition: Deciduous / Mixed / Permanent
  - Ldi1
  - Rdi1
  - LI1
  - RI1
  - Ldi2
  - Rdi2
  - LI2
  - RI2
  - Ldc
  - Rdc
  - LC



- RC
- LP3
- RP3
- LP4
- RP4
- Ldm1
- Rdm1
- LM1
- RM1
- Ldm2
- Rdm2
- LM2
- RM2
- LM3
- RM3

II. *Hyoid*:

- i. Body \_\_\_\_\_
- ii. Greater Cornu (L / R) \_\_\_\_\_

III. *Cervical Vertebrae*:

- i. C1 / Atlas \_\_\_\_\_
- ii. C2 / Axis \_\_\_\_\_
- iii. C3 – C7 \_\_\_\_\_

IV. *Sternum*:

- i. Manubrium \_\_\_\_\_
- ii. Sternebrae \_\_\_\_\_

***Zone B: Upper Right Quadrant***

I. Scapula \_\_\_\_\_

- Coracoid
- Body

II. Clavicle \_\_\_\_\_

III. Humerus \_\_\_\_\_

- Proximal Epiphysis
- Shaft
- Distal Epiphysis

IV. Radius \_\_\_\_\_

- Proximal Epiphysis
- Shaft
- Distal Epiphysis

V. Ulna \_\_\_\_\_

- Proximal Epiphysis
- Shaft
- Distal Epiphysis

VI. Carpals \_\_\_\_\_

- Capitate
- Hamate
- Lunate
- Scaphoid
- Triquetral
- Trapezoid
- Trapezium
- Pisiform

VII. Metacarpals (Includes Epiphyses) \_\_\_\_\_

- MC1
- MC2
- MC3
- MC4
- MC5

VIII. Phalanges \_\_\_\_\_

- Proximal
- Middle

- Distal

IX. Ribs (Includes Unside-able Frags) \_\_\_\_\_

X. Thoracic Vertebrae \_\_\_\_\_

XII. Lumbar Vertebrae \_\_\_\_\_

***Zone C: Upper Left Quadrant***

I. Scapula \_\_\_\_\_

- Coracoid
- Body

II. Clavicle \_\_\_\_\_

III. Humerus \_\_\_\_\_

- Proximal Epiphysis
- Shaft
- Distal Epiphysis

IV. Radius \_\_\_\_\_

- Proximal Epiphysis
- Shaft
- Distal Epiphysis

V. Ulna \_\_\_\_\_

- Proximal Epiphysis
- Shaft
- Distal Epiphysis

VI. Carpals \_\_\_\_\_

- Capitate
- Hamate
- Lunate
- Scaphoid
- Triquetral
- Trapezoid
- Trapezium
- Pisiform

VII. Metacarpals (Includes Epiphyses) \_\_\_\_\_

- MC1
- MC2
- MC3
- MC4
- MC5

VIII. Phalanges (Incls. Epiphyses) \_\_\_\_\_

- Proximal
- Middle
- Distal

IX. Ribs (Includes Unside-able Frags) \_\_\_\_\_

***Zone D: Lower Right Quadrant***

I. Innominate \_\_\_\_\_

- Ilium
- Ischium
- Pubis

II. Sacrum \_\_\_\_\_ Coccygeal Elements \_\_\_\_\_

III. Femur \_\_\_\_\_

- Proximal Epiphysis
- Shaft
- Distal Epiphysis
- Greater Trochanter

IV. Patella \_\_\_\_\_

V. Tibia \_\_\_\_\_

- Proximal Epiphysis
- Shaft
- Distal Epiphysis

VI. Fibula \_\_\_\_\_

- Proximal Epiphysis
- Shaft

- Distal Epiphysis

VII. Tarsals \_\_\_\_\_

- Calcaneous
- Talus
- Cuboid
- Navicular
- Medial Cuneiform (1<sup>st</sup>)
- Intermediate Cuneiform (2<sup>nd</sup>)
- Lateral Cuneiform (3<sup>rd</sup>)

VIII. Metatarsals (Incls. Epiphyses) \_\_\_\_\_

- MT1
- MT2
- MT3
- MT4
- MT5

IX. Phalanges (Incls. Epiphyses) \_\_\_\_\_

- Proximal
- Middle
- Distal

***Zone E: Lower Left Quadrant***

I. Innominate \_\_\_\_\_

- Ilium
- Ischium
- Pubis

II. Femur \_\_\_\_\_

- Proximal Epiphysis
- Shaft
- Distal Epiphysis
- Greater Trochanter

III. Patella \_\_\_\_\_

IV. Tibia \_\_\_\_\_

- Proximal Epiphysis
- Shaft
- Distal Epiphysis

V. Fibula \_\_\_\_\_

- Proximal Epiphysis
- Shaft
- Distal Epiphysis

VI. Tarsals \_\_\_\_\_

- Calcaneous
- Talus
- Cuboid
- Navicular
- Medial Cuneiform (1<sup>st</sup>)
- Intermediate Cuneiform (2<sup>nd</sup>)
- Lateral Cuneiform (3<sup>rd</sup>)

VII. Metatarsals (Incls. Epiphyses) \_\_\_\_\_

- MT1
- MT2
- MT3
- MT4
- MT5

VIII. Phalanges (Incls. Epiphyses) \_\_\_\_\_

- Proximal
- Middle
- Distal

***Miscellaneous:***

I. Unidentifiable Fragments \_\_\_\_\_

**Total Count:** \_\_\_\_\_

II. Hair – Yes / No

## Epiphyseal Appearance / Fusion – Age Determination

Grave \_\_\_\_\_

### *Cranium:*

- I. Occipital
- II. Temporal
- III. Frontal
- IV. Parietal
- V. Maxilla
- VI. Zygoma
- VII. Lacrimal
- VIII. Sphenoid

IX. Nasal

X. Ethmoid

XI. Vomer and Nasal Conchae

XII. Palatine

XIII. Mandible

***Postcranial Elements:***

I. Hyoid

II. Thyroid Cartilage

III. Cervical Vertebrae

IV. Thoracic Vertebrae



V. Lumbar Vertebrae

VI. Sacral Elements

VII. Coccygeal Elements

VIII. Ribs

IX. Sternum

X. Innominate

XI. Clavicle

XII. Scapula

XIII. Humerus

XIV. Radius

XV. Ulna

XVI. Carpals

XVII. Metacarpals

XVIII. Manus Phalanges

XIX. Femur

XX. Patellae

XXI. Tibia

XXII. Fibula

XXIII. Tarsals

XXIV. Metatarsals

## XXV. Pedal Phalanges

**Age Determination – Metric Analysis**  
**Grave** \_\_\_\_\_

- |  |  |
|--|--|
| <p>I. <b>Clavicle:</b> <i>Max. Diaphyseal Length</i></p> <p style="padding-left: 40px;">Left</p> <p style="padding-left: 40px;">Right</p>  | <p>V. <b>Radius:</b> <i>Max. Diaphyseal Length</i></p> <p style="padding-left: 40px;">Left</p> <p style="padding-left: 40px;">Right</p>                              |
| <p>II. <b>Scapula:</b> <i>Max. Height</i></p> <p style="padding-left: 40px;">Left</p> <p style="padding-left: 40px;">Right</p> <p style="padding-left: 80px;"><i>Max. Width</i></p> <p style="padding-left: 40px;">Left</p> <p style="padding-left: 40px;">Right</p> | <p>VI. <b>Femur:</b> <i>Max. Diaphyseal Length</i> (If Fetal, take Shaft Width)</p> <p style="padding-left: 40px;">Left</p> <p style="padding-left: 40px;">Right</p> |
| <p>III. <b>Humerus:</b> <i>Max. Diaphyseal Length</i> (If Fetal, take Distal Width)</p> <p style="padding-left: 40px;">Left</p> <p style="padding-left: 40px;">Right</p>   | <p>VII. <b>Tibia:</b> <i>Max. Diaphyseal Length</i></p> <p style="padding-left: 40px;">Left</p> <p style="padding-left: 40px;">Right</p>                             |
| <p>IV. <b>Ulna:</b> <i>Max. Diaphyseal Length</i></p> <p style="padding-left: 40px;">Left</p> <p style="padding-left: 40px;">Right</p>   | <p>VIII. <b>Fibula:</b> <i>Max. Diaphyseal Length</i></p> <p style="padding-left: 40px;">Left</p> <p style="padding-left: 40px;">Right</p>                           |

**Mandibular and Iliac Morphology – Sex Determination**  
*Based on Loth & Hennenberg and Schutkowski Articles*

**Grave** \_\_\_\_\_

***I. Mandible***

	<u>Female</u>	<u>Male</u>
i. <i>Symphyseal Base</i>	Rounded	Angular
ii. <i>Median Sagittal Line</i>	Smooth	Rough
iii. <i>Eversion of Gonion Region</i>	Continuous	Everted
iv. <i>Mental Protrusion</i> Angular	Faint, Narrow	Wide,
v. <i>Corpus Shape</i>	Curved, Gradual	Ang. / Abrupt

***II. Ilium***

i. <i>Greater Sciatic Notch Angle</i>	> 90 degrees	~ 90 degrees
ii. <i>Greater Sciatic Notch Depth</i>	Shallow	Deep
iii. <i>“Arch” Criterion</i>	Intersects Aur.	No Intersect
iv. <i>Iliac Crest Curvature</i>	Faint S-Shape	Prominent S

## **Non-Metric Skeletal Traits**

**Grave** \_\_\_\_\_

### *Primary Traits:*

1. Metopic Suture
2. Supraorbital Notch
3. Supraorbital Foramen
4. Infraorbital Suture
5. Infraorbital Accessory Foramina
6. Zygomaticofacial Foramen
7. Parietal Foramen
8. Epipteric Bone
9. Coronal Ossicle
10. Bregmatic Ossicle
11. Sagittal Ossicle
12. Apical Bone
13. Lambdic Ossicle
14. Asterionic Bone

15. Occipitalmastoid Ossicle
16. Parietal Notch Bone
17. Os Inca
18. Os Japonicum
19. Posterior Condylar Canal
20. Hypoglossal Canal
21. Sagittal Transverse Sinus
22. Incomplete Foramen Ovale
23. Incomplete Foramen Spinosum
24. Pterygoid Bridging (Spinous or Alar)
25. Tympanic Dehiscence (Foramen of Huschke)
26. Auditory Exostosis
27. Mastoid Foramen
28. Mental Foramen
29. Mandibular Torus
30. Septal Aperture

*Supplemental Traits – Cranial:*

- 31. Frontal Grooves
- 32. Ethmoidal Foramina
- 33. Supratrochlear Notch or Foramen
- 34. Trochlear Spur
- 35. Double Occipital Condylar Facet
- 36. Paracondylar Facet
- 37. Jugular Foramen Bridging
- 38. Pharyngeal Tubercle or Fossa
- 39. Clinoid Bridges or Spurs
- 40. Accessory Lesser Palatine Foramina
- 41. Palatine Torus
- 42. Rocker Mandible
- 43. Suprameatal Pit or Spine
- 44. Marginal Tubercle
- 45. Zygomaxillary Tubercle



- 46. Subnasal Margin
- 47. Lambdoidal Wormian Ossicles
- 48. Mastoid Notch
- 49. Palatine Suture Morphology
- 50. Supreme Nuchal Line
- 51. Precondylar Tubercle
- 52. Parietal Process of Tympanic Squama
- 53. Paracondylar Process
- 54. Accessory Optic Canal
- 55. Foramen Vesalius

*Supplemental Traits – Postcranial:*

- 56. Retroarticular Bridge
- 57. Accessory Transverse Foramina
- 58. Vertebral # Shift
- 59. Accessory Sacroiliac Articulation
- 60. Suprascapular Foramen / Notch

61. Accessory Acromial Articular Facet

62. Glenoid Fossa Extension

63. Circumflex Sulcus

64. Sternal Foramen

65. Supratrochlear Spur

66. Allen's Fossa

67. Porier's Facet

68. 3<sup>rd</sup> Trochanter

69. Vastus Notch

70. Squatting Facet (Tibia)